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A REVIEW OF 999 FATAL CASES IN THE GLASGOW ROYAL MATERNITY AND WOMEN'S HOSPITAL DURING TEN YEARS, 1925–34 *

BY DUGALD BAIRD, B.Sc., M.D. Glasg., F.C.O.G.

VISITING OBSTETRIC SURGEON, GLASGOW ROYAL MATERNITY HOSPITAL

THIS investigation has been undertaken to test the impression that, although the maternal mortality for Scotland generally continues to rise, the death-rate in hospital is steadily falling. In 1930 big changes were made in the organisation of the Glasgow Royal Maternity Hospital and the staff was greatly increased. The results recorded in the five-year periods before and after these changes are here compared.

During the first five-year period, 19,134 cases were admitted with 542 deaths (28 per 1000), while during the second five-year period, 22,425 cases were admitted with 457 deaths (20 per 1000). There has therefore been a considerable fall in the death-rate during the last five years, despite the fact that the percentage of abnormal cases has risen from 62 to 65. Table I. contrasts the numbers and death-rates of some of the complications dealt with during the two periods.

TABLE I

Numbers and Death-rates of Complications during the Two Periods

Condition.	First five years.		Second five years.		Difference between first and second five years.
	No. of cases.	Mortality per cent.	No. of cases.	Mortality per cent.	
Hyperemesis ..	255	12·1	382	4·4	+127
Albuminuria	1162	2·7	1397	1·5	+235
Eclampsia	395	18·0	330	17·6	− 65
Forceps, &c.	1260	4·3	1810	3·3	+550
Cæsarean section for contracted pelvis ..	424	3·0	699	2·0	+275
Failed forceps outside	190	16·3	236	13·1	+ 46
Craniotomy	226	11·0	147	7·5	− 79
Abortion	3290	1·2	3219	0·6	− 71
Placenta prævia ..	406	13·0	487	7·5	+ 81
Accidental hæmorrhage	527	4·5	633	5·0	+106
Cardiac disease ..	345	10·4	606	6·4	+261

For further analysis the fatal cases have been grouped according to the condition for which the patient was admitted to hospital—unless she was admitted in labour or for some complication of labour, in which case they have been classified according to the cause of death.

TABLE II

Analysis of Fatal Cases

	1925–29.	1930–34.
Toxæmia	159	118
Sepsis	139	98
Shock	58	56
Hæmorrhage	104	107
Intercurrent disease ..	82	78

The comparison shows a notable fall in the number of deaths from toxæmia and sepsis in the second five years, and this is in direct contrast to the finding of the Department of Health for Scotland, in their 1935 report, that the death-rate from those two causes is on the increase. Each group will now be dealt with in detail.

TOXÆMIA

Eclampsia.—During the first five years there were 395 cases of eclampsia with 71 deaths (18 per cent. mortality), and in the second five years 330 cases with 58 deaths (17·6 per cent. mortality). Hence there has been no striking improvement in the results of treatment of eclampsia, and we must look to prevention by strict antenatal care to reduce the incidence. In the first five-year period very little is known about the antenatal care received by the fatal cases. We do know, however, that 8 of them were being treated in the antenatal wards of the hospital for albuminuria. We know that in the second five years 40 per cent. of the cases had no antenatal care, and in most of the others the antenatal supervision was poor. There were no deaths from eclampsia in this second period among women being treated in the antenatal wards of the hospital, but 7 of the fatal cases attended the out-patient department of the hospital and were later admitted with eclampsia. These 7 cases all occurred before the end of 1932, since when the antenatal supervision has been stricter and the importance of the fact that raised blood pressure may be the only premonitory symptom of toxæmia has been realised. In the years 1933 and 1934 there have been no fatal cases of eclampsia in patients under hospital supervision. This suggests that death from eclampsia can be avoided by intensive antenatal care. The following figures show, however, that eclamptic seizures still occur in patients under hospital treatment. During the years 1934 and 1935, 46 cases of eclampsia were admitted to one unit of the hospital, 7 of which were under hospital supervision. There were 6 deaths among 35 patients who had poor antenatal care or none (17·1 per cent. mortality), none in the hospital cases, and none in 4 who had good antenatal care outside. One of the hospital cases may be quoted.

Mrs. A., aged 22; first pregnancy, last menstrual period March 24th, 1934. On Dec. 24th she was sent to the out-patient department of the Maternity Hospital from a local authority clinic because of slight œdema and headache of two weeks' duration. Blood pressure 160/108; urine clear. Hospital treatment was refused, but on Dec. 31st she was admitted to hospital after persuasion; B.P. 168/110. Jan. 3rd, 1935: urine clear; very slight œdema; B.P. 154/108; urinary output good. As patient was at term castor oil and quinine given. Jan. 4th: labour pains began at 7 P.M.; urine clear at 8 P.M.; eclamptic seizure at 11 P.M., with B.P. 156/82 and a cloud of albumin in the urine. Jan. 5th, 11 A.M.: 14 fits to date; forceps delivery under local anæsthesia; child 7 lb. stillborn. Uninterrupted recovery; urine clear on the third day.

This case is a striking demonstration of the fact that raised blood pressure is one of the most reliable pre-eclamptic signs, and may be present long before there is any albumin in the urine. There was no albuminuria in this case three hours before the onset of eclampsia.

In conclusion, it would appear that strict antenatal care can reduce the incidence of eclampsia and also its severity; for when eclampsia develops, despite good antenatal care, it seems to take the

* The substance of this paper was read before the Glasgow Obstetrical Society on Jan. 22nd.

form of seizures brought on by the stress of labour, with rapid recovery in the puerperium.

Albuminuria.—In 1162 patients treated in the antenatal wards for albuminuria during the first five-year period there were 40 deaths (3·4 per cent.), and in 1397 patients during the second period 22 deaths (1·5 per cent.). This includes the 8 deaths from eclampsia which occurred in the first five-year period, already dealt with above. The improvement in the death-rate in the second five years is not due to any striking advance in treatment but to earlier admission to hospital and earlier termination of the pregnancy with improved methods of induction of labour. During the first five years valuable time was frequently lost by attempting medical induction, which was often unsuccessful and necessitated the use of bougies which often had to be reinserted several times before labour began. Bougies are now seldom used and have been replaced by rupture of the membranes, which has many advantages. It induces labour more quickly, does not require a general anæsthetic, and is less liable to be followed by sepsis. Although surgical induction was practised 268 times in the second five years and only 130 times in the first, there were only 3 deaths from sepsis in the second period as compared with 10 in the first. Of these 13 deaths 8 occurred after the use of bougies and 1 after rupture of the membranes. The gross liver damage demonstrable histologically in many of those toxæmic cases emphasises the unsuitability of a general anæsthetic, and especially chloroform, which was the anæsthetic used for the insertion of bougies. In 10 of the 54 cases with fatal albuminuria, the obstetric history showed quite clearly that the patient was quite unfit for pregnancy, which should have been prevented.

Hyperemesis (vomiting in the early months of pregnancy).—The number of cases of hyperemesis admitted to hospital has increased from 255 in the first five-year period to 382 in the second, while the death-rate has fallen from 12·1 per cent. to 4·4 per cent. As with albuminuria, there has been no striking improvement in the method of treatment in hospital, and the improvement in the death-rate is due to earlier termination of the pregnancy by better methods. There should be almost no deaths from hyperemesis, and this could be achieved by earlier admission to hospital. In the second five years, 11 of the 17 deaths from hyperemesis were in patients so ill on admission that they died within four days. The improved technique for termination of pregnancy in cases of hyperemesis, reflected in the fall in the number of deaths from shock from 13 to 3, consists of the substitution of spinal anæsthesia or gas-and-oxygen for chloroform, and of abdominal hysterotomy in many cases for curettage, preceded by dilatation of the cervix by laminaria tents or forcibly with Hegar's dilators.

Toxic vomiting in the later months.—This category includes cases of toxæmia in the later months where there is no rise of blood pressure, œdema, or albuminuria, the chief symptom being vomiting. In the first five years there were 15 deaths, 10 occurring soon after admission in severely ill patients, and in the second five years 9 deaths, all soon after admission in severely ill patients. Apparently, therefore, the mortality could be reduced by earlier admission to hospital.

Pyelitis of pregnancy is included with the toxæmias for convenience. In the first five years there were 10 deaths and in the second five years 11. As microscopic examination of a catheter specimen of urine was not a routine practice in all patients admitted to the antenatal wards during the first five years, the exact number of cases of pyelitis admitted during this period is unknown and the mortality-rates for the two five-year periods cannot be compared. As in the toxæmias already considered, earlier admission to hospital and better methods of terminating pregnancy would reduce the mortality.

SEPSIS

This heading covers all cases in which the patient died in another hospital after being transferred because of sepsis. It does not cover deaths from sepsis following the toxæmias and hæmorrhages of the later months, for these are dealt with in each separate group. The number of deaths from sepsis has fallen from 139 in the first five years to 98 in the second.

Sepsis following normal delivery.—There has been a striking fall in the number of deaths from sepsis after spontaneous delivery, for although over 1000 more normal cases were admitted to the hospital in the second five years, there were only 15 deaths as compared with 30 in the first. Those 15 deaths include 2 cases which were already infected on admission, delivery having occurred outside. The improvement is probably due to recognition of the fact that the commonest source of the hæmolytic streptococcus is the nasopharynx, the practical application of which includes the wearing of masks and the exclusion of all persons harbouring streptococci from contact with the patient during labour or the puerperium. For the second five-year period, the death-rate from sepsis following spontaneous delivery in the group under consideration is approximately 1·3 per 1000, which demonstrates that the risk of sepsis in hospital is no greater than elsewhere.

Sepsis following complicated delivery (excluding Cæsarean section and "failed forceps outside").—The deaths from sepsis in this group have fallen from 42 in the first five years to 27 in the second. For the purpose of analysis cases have been divided into emergency and hospital cases, the latter including those admitted so early in labour that the hospital was really responsible for the conduct of the labour. The number of deaths in hospital cases remains the same, but there is a striking fall in the deaths in emergency cases, from 28 in the first five years to 13 in the second. The improvement in antenatal care has resulted in fewer cases being admitted as emergencies after prolonged labour and more before the onset of labour or in the early stages of labour. This is shown by the greater number of cases of contracted pelvis dealt with by the hospital (2335 in the second five years as compared with 1370 in the first) and by the greater number of forceps deliveries in hospital (1810 compared with 1260). The mortality in hospital cases has therefore diminished, since the number of deaths has remained the same in the two periods.

The results in this group show a great all-round improvement in the treatment of difficult labour, although there are still about 25 per cent. of these fatal cases which are probably avoidable. More than half of the rest of the fatal cases, which were probably unavoidable, were cases of uterine inertia, resulting in prolonged labour, repeated vaginal examination, and instrumental delivery. The fact that the cause of death in 4 cases was chloroform poisoning emphasises the unsuitability of this anæsthetic in cases of difficult labour.

Sepsis following "failed forceps outside."—The number of deaths from sepsis in this category has risen from 19 in the first five years to 22 in the second,

and the number of such cases admitted to hospital has risen from 190 to 236. The increase in this group is disquieting. In all the fatal cases the head was still high in the pelvis on admission, under which circumstances forceps delivery is rarely the correct procedure and is so difficult that it should be attempted only under the best conditions. Where there is a definite contracted pelvis in a primigravida, or a history of difficult delivery in a multipara, difficulty should be anticipated. Of the fatal cases, however, 9 were in multiparæ in whom the previous labours had been easy and where appreciation of the high position of the head in the pelvis was the only warning of probable difficulty. Hospital treatment can have very little influence on the mortality in this group.

Sepsis following Cæsarean section.—There were 424 Cæsarean sections performed for contracted pelvis in the first five years with 13 deaths from sepsis (3 per cent.), and 699 in the second five years with 14 deaths from sepsis (2 per cent.). The fact that the death-rate from sepsis after Cæsarean section has fallen from 3 to 2 per cent. is probably due to the more frequent use of the lower uterine segment operation in the second five years. In the first five years 410 classical Cæsarean sections were performed with 13 deaths (3 per cent.)—12 of which were due to generalised peritonitis—and 14 lower uterine segment sections with no deaths. In the second five years 449 classical Cæsarean sections were performed with 11 deaths (2·6 per cent.)—6 from generalised peritonitis—and 250 lower uterine segment operations with 3 deaths (1·2 per cent.), none from generalised peritonitis. This difference in the mortality from the two operations is all the more striking because a bigger proportion of the cases which had the lower uterine segment operation were "suspect"—i.e., cases where the risk of sepsis was greater because the patients had been many hours in labour. In the "suspect" cases in this group the notifiable pyrexia-rate was 18 per cent. in those who had the lower uterine segment operation and 45 per cent. in those who had the classical Cæsarean section. The risk of peritonitis is less after the lower uterine segment operation than after the classical Cæsarean section. The lower uterine segment operation might be employed more often in cases of minor disproportion, after unsuccessful trial labour, which in these cases may be the only means of deciding whether delivery from below is possible or not. It is certainly safer than the difficult forceps delivery or craniotomy which is the alternative in these cases.

Sepsis following manual removal of the placenta.—In the first five years there were 9 deaths from sepsis after manual removal of the placenta, 7 in hospital cases and 2 in patients delivered outside; and in the second five years 7 deaths, 3 in hospital cases and 4 in patients delivered outside. Numbers are too small to draw any conclusions.

Sepsis following abortion.—In the first five years there were 3290 cases of abortion admitted with 26 deaths (0·8 per cent.), and in the second five years 3219 cases with 11 deaths (0·3 per cent.). The reduction in the mortality-rate may be attributable to more strict enforcement of refusal to admit septic abortion cases. The only change in hospital technique is that packing of the vagina has been practically given up.

SHOCK

There were 58 deaths from shock in the first five years and 56 in the second. Deaths under anæsthesia have been included in this group for convenience.

Deaths under anæsthesia include 5 cases of delayed chloroform poisoning. In the fatal cases the operations were curettage for abortion (7), Cæsarean section for contracted pelvis (3), insertion of bougies (2), and forceps delivery after long labour (11), in 5 of which the cause of death was delayed chloroform poisoning. Chloroform was the anæsthetic in all cases except one, in which spinal anæsthesia was used.

The fact that delayed chloroform poisoning was the sole cause of death in 5 cases emphasises the danger of chloroform in obstetrics.

Deaths from shock, excluding those under anæsthesia.—In the first five years there were 48 fatal cases and in the second five years 42. There have been fewer deaths in emergency cases but just as many in hospital cases. As in the sepsis group, this is due to better antenatal care resulting in fewer cases of disproportion being admitted as emergencies and more being admitted before the onset of labour. But there is still room for improvement in antenatal care outside, for in the second five years 24 of the 42 fatal cases were emergencies. Of the other 18 which occurred in hospital cases death might have been avoided in several but was probably unavoidable in most.

Of the fatal cases in this group in the ten-year period 26 had rupture of the uterus, 4 in hospital cases and 22 in emergency cases. Eleven died undelivered. The average parity was seven, and there were only 2 primigravidæ. Of the 24 multiparæ 10 had had no previous difficulty. The increasing danger of rupture of the uterus with increasing parity should always be borne in mind, even where the labour is easy.

HÆMORRHAGE

In the first five years there were 104 deaths from antepartum and postpartum hæmorrhage and in the second five years 107. There is a diminished number of fatal cases of placenta prævia and an increased number of deaths from accidental hæmorrhage and postpartum hæmorrhage in the second five years.

Placenta prævia.—During the first five years there were 406 cases of placenta prævia with 53 deaths (13 per cent.), and during the second five years 487 cases with 37 deaths (7·5 per cent.). The immediate cause of death was hæmorrhage and shock in 56 and sepsis in 34. In 55 of the 90 fatal cases the patient arrived in good condition and in 12 she might have done so but for neglect of warning hæmorrhage. The fall in the death-rate in the second five years must be largely due to improved technique in hospital, but that this could be further improved is demonstrated by the fact that 22 of the 37 fatal cases in the second five years arrived in hospital in good condition. In many of those there was delay in emptying the uterus, either because the bleeding had ceased temporarily or the cervix was closed, making exact diagnosis difficult. One unit of the hospital has gradually in the last five years adopted the policy of emptying the uterus at once by Cæsarean section if the placenta is felt to reach down to within half an inch of or to cover the internal os, even although there may be no bleeding at the time. Blood transfusion is used extensively. During the second five-year period 174 cases of placenta prævia were admitted to this unit with 7 deaths (4 per cent.); and 3 of them were admitted moribund.

I see no reason why the death-rate from placenta prævia should be more than 3 per cent.—less than

half the present rate for the whole hospital. Some lives would be saved by earlier transfer to hospital on the first hæmorrhage. Most of the deaths would be avoided by improvement in hospital technique—that is, prompt emptying of the uterus after admission to hospital, the avoidance as far as possible of vaginal manipulation, and the extensive use of blood transfusion. This last has been employed far too little in the past: it was used in only 3 of the 56 fatal cases where hæmorrhage was the cause of death, and in only 7 of the 34 where sepsis was the cause of death. It should not be regarded as a desperate remedy but should be given as quickly as possible after the blood loss.

Accidental hæmorrhage.—During the first five years there were 527 cases with 24 deaths (4·5 per cent.) and in the second five years 633 cases with 32 deaths (5 per cent.). In 42 of the fatal cases the patient was so ill on admission that she died within a few hours. In 4 cases there was excessive bleeding, and the patient's life might have been saved by blood transfusion; but on the whole there seems little scope for improvement in the results of treatment along the usual lines. The question arises whether these catastrophes could be avoided by adequate antenatal care, since they are commonly believed to be the result of toxæmia; but an analysis of the more complete antenatal records of the second five years fails to show evidence of toxæmia in many of the cases. Even where there was toxæmia it was usually mild, hæmorrhage occurring suddenly without warning, so that antenatal care can do little in the prevention of accidental hæmorrhage. In 30 of the 56 fatal cases in the whole ten years the patient had had seven or more children, often in rapid succession. Better spacing of the children would probably diminish the risk of this complication.

Postpartum hæmorrhage.—During the first five years there were 16 deaths from postpartum hæmorrhage and 27 during the second period. Blood transfusion was given in only 2 of the 43 cases, although in 29 of these (14 hospital and 15 emergency cases) there was time available. Organisation of donors on a large scale should make it possible for these patients to have blood transfusion within a short time of the hæmorrhage.

Abortion.—In the first five years there were 3290 cases of abortion with 8 deaths from hæmorrhage (0·24 per cent.), and in the second five years 3219 cases with 10 deaths (0·31 per cent.). In 4 of the fatal cases the patient was moribund on admission, and in the remaining 14, although the patients did not die until after periods varying from several hours to several days after admission, blood transfusion was given in only 2. While the death-rate in this group is low, it could be further reduced by earlier admission to hospital and more frequent use of blood transfusion, which would also minimise the incidence of sepsis by improving the patient's resistance.

INTERCURRENT DISEASE

During the first five years there were 82 deaths from intercurrent disease and in the second five years 77. This group includes such conditions as pneumonia, tuberculosis, meningitis, cancer, and cardiac disease. Only the deaths from cardiac disease will be considered in detail.

In the first five years there were 345 cases of cardiac disease complicated by pregnancy with 36 deaths (10·4 per cent.), and in the second five years 606 cases with 39 deaths (6·4 per cent.). The reason for the fall in the death-rate is that women with severe cardiac disease are being admitted to hospital earlier and are being kept in hospital longer. Here again, however, there is room for improvement, for in the last five years 27 patients were admitted very seriously ill and 8 of them died before the pregnancy could be terminated. The best mode of delivery varies with each case but is not the most important factor in deciding the outcome. The decision must be made early in pregnancy whether it is safe to allow the pregnancy to proceed. Where it is decided that the cardiac reserve is sufficient, the greatest care to preserve it should be taken by adequate rest in bed. In 15 of the fatal cases in the first five years, and 5 in the second, the cardiac lesion was so severe that pregnancy should have been prevented, preferably by sterilisation.

CONCLUSIONS

The maternal death-rate in the Glasgow Royal Maternity Hospital is falling—partly because of an all-round improvement in technique and partly because the more abnormal cases, which were formerly sent in as emergencies, are now being sent to hospital before labour or in the early stages of labour.

There is room for improvement both inside and outside the hospital. The chief faults inside the hospital are (1) the lack of proper organisation for immediate blood transfusion in cases of hæmorrhage, and (2) the fact that many urgent cases, which present most difficult obstetric problems, have to be dealt with by junior members of the staff because their seniors are non-resident. The faults outside the hospital are the lack of adequate antenatal supervision, particularly in the toxæmias, and unjustifiable attempts to perform major obstetric procedures under adverse conditions. The problem outside the hospital, however, is more difficult, owing to ignorance and lack of coöperation on the part of the patient. Moreover in Glasgow rickets in childhood (causing a high incidence of contracted pelvis), multiparity, poor housing, and poverty are all very important factors. As the class from which our hospital patients come cannot afford even a small fee to a family doctor, an extension of antenatal supervision by the local authority—possibly with compulsory notification of pregnancy—is urgently required. More hospital accommodation, especially for antenatal cases, is also a pressing need.

It is clear that in some 9 per cent. of the fatal cases pregnancy was a grave risk which the patient should not have been allowed to undertake. Sterilisation or contraception was indicated. Experience at the voluntary birth control clinic shows that most of the patients cannot pay the sum necessary for the purchase of contraceptive materials, and as there are no birth control clinics under the local authority in Glasgow, this matter deserves their immediate attention.

NEW HOSPITAL FOR MELKSHAM.—Plans for this hospital, to be erected with the Ludlow-Bruges legacy of £200,000, have been prepared. They provide for a cottage hospital with accommodation for about forty patients. The wards and the administrative block will be of one and two storeys respectively.

WALSALL GENERAL HOSPITAL.—Two members of the Hale family have promised to provide the money for a children's ward at this hospital. The present ward has room for 10 children only, and those above eight years old have to be accommodated in adult wards. The cost will be between £4000 and £5000.

CHRONIC CICATRISING ENTERITIS

A PHASE OF BENIGN NON-SPECIFIC GRANULOMA OF THE SMALL INTESTINE

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Granulomata of the intestine were formerly considered neoplastic, but later a "specific" group was isolated, leaving a non-specific residuum. To begin with, the granulomata of the large bowel received attention, and it is only in the last ten years that similar lesions in the small intestine have been adequately investigated.

Before 1895 most circumscribed chronic lesions of the intestine appear to have been regarded as neoplastic, but in that year Senn [60] distinguished between infective granuloma and carcinoma, while in 1907 Moynihan [54] reported six cases in which the original diagnosis of malignant disease of the large bowel was replaced by that of granuloma of the intestine. Two years afterwards Braun [9] gave a survey of the condition and explained so-called cured cases of malignant disease as benign granulomata that had undergone resolution. Proust, Robson,[57] and Lejars[4 6] reported similar lesions. In 1913 Dalziel [22] described cases in which the small, as well as the large, intestine was involved, and in one of these two feet of jejunum was removed at operation for partial obstruction.

Tietze [63] reviewed the condition in 1920. In some cases the cause of the granuloma was held to be tuberculous infection or syphilis, but in the majority no definite cause could be found. The non-specific origin of the granulomata of the intestine was emphasised by Moschcowitz and Wilensky [53] in 1923, while Mock [51] in 1931 concluded that the benign non-specific granulomata did in fact form a definite pathological entity. He described their possible ætiology and symptoms, and believed them to be similar to tumours occurring elsewhere in the body. Since that time, although specific granulomata (e.g., tuberculous,[1 12 17 23 32]) of the intestine have been reported, there is an increased tendency to regard many as of non-specific origin.[3 59]

The importance of the benign non-specific granulomata affecting the small intestine was brought out by Crohn, Ginzberg, and Oppenheimer.[19] Among 52 cases of non-specific granuloma of the intestine these authors isolated 13 in which the terminal ileum was involved.[33] To this localised condition the name of regional ileitis was given, although in America it also became known as Crohn's disease. Following this work numerous cases of granuloma of the lower ileum were reported under such titles as Crohn's disease, regional ileitis,[13] regional enteritis,[11] chronic cicatrising enteritis,[5 21 24] and localised chronic ulcerative ileitis.[7] In some of them parts of the small intestine other than the terminal ileum were involved and lesions were found in the jejunum and in the duodenum. This more widespread involvement of the small intestine led Crohn [18] to enlarge and amend his original concept.

It is interesting to note that almost all the recorded cases of non-specific granuloma of the small intestine are in the American literature; only a few are to be found in British and continental journals. In 1933 Molesworth [52] in this country reported a single case of granuloma of the intestine with stenosis of the ileocæcal valve and likened it to cases described by Mock. In 1934 Jackman [40] described two cases under the heading of localised hypertrophic enteritis, while Dickson Wright [68] demonstrated two cases of Crohn's disease at the Medical Society of London in January, 1935. Owing to the recent interest in this condition the following case is recorded.

CASE-HISTORY

The patient, a man of 63, was of good family antecedents, and for thirty years had lived abroad as a medical missionary. In 1927 he was not allowed to return to China because of poor health. This however did not prevent him from holding several medical appointments in this country, and at the time of the onset of illness he was engaged in private practice in London. From 1927 he had suffered from indigestion and from "chills" which were liable to lead to vomiting. He also complained of indefinite pains in the back and chest which were attributed to "rheumatism and lumbago." He was seen by several doctors but no definite diagnosis was made, and he found that by following a simple diet he was able to overcome any temporary discomfort. For one year he had been losing weight and had seemed to be in poorer health.

Previous Illnesses.—Paratyphoid in 1906; sunstroke in 1907; typhoid in 1923; septic finger with cellulitis and axillary abscess in 1926, with amœbic dysentery in the same year.

History of Present Illness.—Early in September, 1934, the patient took his annual holiday and returned home seemingly fit. On Sept. 27th he felt "queer" and was unable to attend to his practice. Next day he complained of acute abdominal discomfort, and he was admitted the same evening to a London general hospital. On admission his temperature was 99·4° F. The liver was said to be enlarged and coarse friction was heard over the liver in the sixth right intercostal space. In view of the history of amœbic dysentery a tentative diagnosis of amœbic hepatitis was made and emetine gr. ½ was given intramuscularly. Examination of the stools failed to show entamœbæ or cysts. On three evenings the temperature rose to 99·4° but at all other times it was subnormal. On the third day he became difficult to manage, demanding food in the middle of the night and insisting that he was quite well. He rapidly developed a delirious condition in which he tried to get into bed without taking off his shoes and trousers, and on the sixth day he discharged himself from hospital.

During the next fortnight he was staying with relatives, and in the first week his physical condition showed little change. He was placed on a light diet, and to begin with took his food well. There was an occasional rise of temperature but no record was kept. During the second week he developed a thrombosis of the right calf and was admitted to the Hospital for Tropical Diseases, London. On the previous night his temperature rose to 101·4°, and he is said to have been making rambling remarks. On admission he was noted as appearing dehydrated and toxic, and during his stay his diet had to be supplemented by intravenous glucose-saline. Physically his condition remained unchanged; he had neither diarrhœa nor vomiting, and there was a slight rise of temperature on only two occasions. His mental state showed variation: at times drowsy, he was also at times violent. Sometimes he would refuse food by day, only to eat it at night. As the patient's uncoöperative attitude was dominating the clinical picture he was transferred to the Maudsley Hospital on Nov. 13th.

The *physical examination* on admission showed a middle-aged man, cachectic, and dehydrated, with sunken eyes and prominent cheek-bones. He lay in bed with his eyes closed and took no evident interest in his surroundings. He appeared to understand what was said to him, but would only answer by a nod of the head or a shrug of the shoulders. He would sit up or lie down, but would not coöperate in the finer tests. His breath was offensive,

the tongue was dry-coated, and the teeth showed pyorrhœa. Examination of the abdomen was difficult owing to the patient's failure to relax; the upper abdomen was held more tensely than the lower, which could be palpated satisfactorily. The patient indicated that he had had pain in the right iliac fossa but that it was no longer present. There was no visible peristalsis; no tumour or masses were found. The liver and spleen were not enlarged, the kidneys could not be palpated. Borborygmi were noted; the patient was incontinent of fæces, no blood or slime was present. No abnormalities were detected in the respiratory, musculo-skeletal, and central nervous systems. The heart sounds were weak but no murmurs were detected. The vessels were not unduly thickened. Blood pressure 110/70. The patient had glandular hypospadias.

Progress in Hospital.—The mental state continued negativistic; he resisted attention, but did not help himself. He showed little interest in his surroundings, and he occasionally made remarks, but no natural conversation was ever possible. Shortly after admission tube-feeding was started, and had to be continued at intervals. The patient vomited most days, and was also doubly incontinent. The vomiting was of two kinds—one immediately after being tube-fed, the other two hours later. It was never offensive or projectile. At one time the vomiting was so constant that for three days nothing but intravenous glucose-saline was given, and even then the patient tried to remove the needles. During December the vomiting became less frequent and he was able to take convalescent diet, at a few meals even feeding himself. Throughout he remained stuporous, and he never complained of pain or tenderness. The physical condition showed little change except that he appeared to be losing ground. The systolic blood pressure dropped to 78—the diastolic could not be detected. Four days before his death his temperature rose, on one occasion to 99·8°, but no cause for this could be found. Finally on Feb. 2nd he died quietly in his sleep.

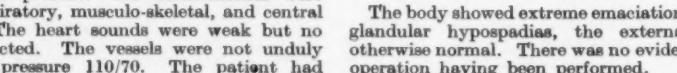

FIG. 1.—Diagrammatic scheme of the small intestine from the pylorus to the ileo-cæcal valve, showing 13 places of thickening and 7 of thinning. Scale 1 mm. = 1 inch.

CLINICAL AND LABORATORY DATA

The following data include tests carried out both at the Hospital for Tropical Diseases and at the Maudsley Hospital.

Temperature: Sept. 27th, 28th, 29th, daily swing from 97·6–99·4° F. No definite records are available for the period Oct. 2nd–16th. Oct. 16th, 101°; 17th, 100°; 19th, 99°. Thereafter subnormal till Nov. 12th, when 99° was again recorded; it continued at an average of 97° till four days before his death when 99·8° was reported, but it fell again to 97°.

Pulse: The rate remained between 70–80 till December when it rose to an average of 100 and remained at that level with little variation till within a few days of his death.

Weight: Sept. 30th, 7 st. 4¾ lb.; Nov. 11th, 6 st. 6 lb.; Jan. 29th, 5 st. 12 lb.

Laboratory tests: The blood counts showed a progressive anæmia: 4,200,000–3,230,000 red cells per c.mm.; hæmoglobin, 80–58 per cent. The white count on admission was 12,000; thereafter no count above 4000 was obtained. The polymorphonuclear leucocyte percentage remained about 70 per cent. No abnormal red or white cells were seen. Neither vomit nor gastric analysis showed abnormal findings. Free acid was present in the fasting juice.

Fæces: The patient was incontinent of fæces on most days, but had diarrhœa only twice. Examinations for blood and slime were always negative. Culture of the stools showed *B. coli*, enterococci; no organisms of the typhoid group or entamœbæ were detected. *Giardia lamblia* cysts were found on several occasions.

Urine: A trace of albumin was present.

Other examinations of the blood including blood culture; urea and cholesterol estimation; and Wassermann, Kahn, and Van den Bergh tests all gave negative or normal findings. The sedimentation-rate was increased; the blood-serum agglutinated typhoid 1 : 250. A lævulose-tolerance test and examination of the cerebro-spinal fluid failed to show any abnormalities. Several of these examinations were repeated more than once. Radiography was unfortunately impossible owing to the patient's lack of coöperation and his poor physical state.

AUTOPSY

The body showed extreme emaciation, but apart from the glandular hypospadias, the external appearance was otherwise normal. There was no evidence of an abdominal operation having been performed.

On opening the abdomen the great omentum was seen to be firmly bound down to the right iliac fossa. There was a generalised early peritonitis, non-hæmorrhagic, with very little free fluid. There was surface glazing of the peritoneum, with lymph flaking more conspicuous in the neighbourhood of the lower ileum and other portions of the small intestine.

At varying points along its length the small intestine showed evidence of an inflammatory process in its walls. There were thirteen such portions as shown diagrammatically in Fig. 1, varying in length from ½ in. to 2 in. These portions were widely separated, as seen inside the abdomen, and in their neighbourhood the peritonitis was most evident. The first as measured in the formalinised specimen was 21 in. from the pylorus, the last 4½ in. from the ileocæcal valve. In the fresh state these portions showed a relatively sharply defined area of congestive lividity. The adjacent mesentery was thickened and congested, but the mesenteric lymph nodes were not enlarged. The vessels in the mesentery appeared normal. These portions felt firm and hard, and on opening the gut the lumen of the intestine in these parts was narrowed and the wall greatly thickened. The degree of constriction varied but in the narrowest part the lumen was 0·5 cm. in diameter, and the thickest wall measured 0·9 cm. The thickness was associated with the presence of fibrous tissue and was greatest on the mesenteric side (Fig. 2). The mucous membrane had lost its normal rugæ, was thickened, more congested, and more spongy. There were one or two areas of ulceration.

There were also lengths of intestine which were ballooned out, with very thin walls, and no rugæ. Seven such portions were present, bearing no constant relation to the constricted parts. Sometimes they preceded or followed a constricted part (Fig. 3); sometimes normal gut intervened. The diagram explains the relation.

The inflammatory process did not show the same degree of activity in each of the thirteen portions. The more active lesions were in the neighbourhood of the lower ileum, and there the peritonitis was most marked, and there the omentum was bound down. The large intestine appeared normal saving for a small area of doubtful thickening in the cæcum. The appendix was normal.

The liver was slightly smaller than normal and showed slight back-pressure effect. No evidence of amœbic hepatitis or abscess was found. The bilary tract was normal. The spleen was a toxic spleen. The kidneys were small with thinned, ill-defined cortices and slightly granular surfaces. The other abdominal organs were normal. In the thorax the lungs showed terminal bilateral broncho-pneumonia. There was no evidence of active tubercle in the pleuræ, lungs, or mediastinum. There was gross atheroma of the descending aorta. The heart and brain were normal.

MICROSCOPICAL EXAMINATION

Transverse sections of the localised lesions of the small intestine showed variations corresponding to the situation of the lesion. In general those nearer the ileocæcal valve

showed evidence of a more acute pathological process than those further removed.

In the parts of more acute reaction there was much congestion and œdema of all portions of the bowel wall, and in these parts the mesentery was also involved. The reaction was a fibroblastic reaction with an infiltration of polymorphonuclear leucocytes, round cells, and plasma cells. In parts the reaction had gone on to a definite laying-down of fibrous tissue. The mucous membrane showed ulceration, and the submucosa was much thickened by congestion and cellular infiltration (Fig. 4). There were in parts accumulations of polymorphonuclear leucocytes with formation of small abscesses. The lymphoid tissue was not hypertrophied. The muscle coats showed most markedly the laying down of fibrous tissue, but there was also an infiltration with leucocytes. This infiltration was most evident in the tissue plane between the longitudinal and circular muscle coats. The serosa showed thickening with fibrinous exudate in which leucocytes were enmeshed.

In the parts of less acute reaction there was more fibrosis and less leucocytic infiltration. The mucous membrane was more intact. The striking feature of these portions was the presence of giant cells of foreign-body type in the tissue plane between the longitudinal and circular muscle coats. These giant cells were numerous and were found only in this plane. They were in close relationship to ganglion cells of Auerbach's plexus which appeared to be particularly prominent in these sections (Fig. 5). The giant cells contained hard-looking crystalline bodies of variable shape and size. In their neighbourhood the round-cell infiltration was more intense.

Everywhere the reaction was attended by great thickening of the bowel wall, with encroachment on the lumen. There was no pathological evidence of tubercle. The sections appeared to be those of non-specific granulomata of the small intestine. Sections of the ballooned portion showed a marked attenuation but without inflammatory reaction.

Sections of the liver showed a good deal of fatty degeneration particularly affecting the portal zone, but without inflammatory reaction. In the kidneys there was chronic glomerulo-tubular nephritis with acute exacerbation.

DISCUSSION

Symptoms and Signs.—This case, although presenting the pathological features of chronic cicatrising

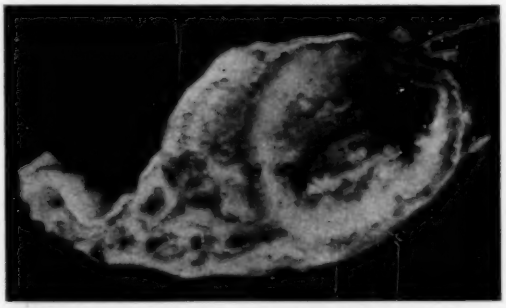

FIG. 2.—Photograph of a cross-section of the ileum showing thickening of its walls and mesentery.

enteritis, had an abnormal symptomatology owing to the patient's mental state.

Crohn [19] divided his cases into four clinical types which have been adhered to by subsequent authors.

1. Acute intra-abdominal disease with peritoneal irritation.
2. Ulcerative enteritis.
3. Chronic obstruction of the small intestine.
4. Persistent intractable fistulæ in the right lower quadrant.

Each of these types has its characteristic symptoms. In the first type acute appendicitis is simulated and in this connexion it is noteworthy that appendicectomy has been performed for the relief of symptoms [25 56]; other cases of "acute abdomen" may represent the acute stage of this condition.[29 40] In the second type the patient complains of colic and

FIG. 3.—Photograph of a portion of the ileum showing adjacent constricted and ballooned parts.

frequency of bowel movements, and there is usually a low-grade constant fever. In the third type incomplete obstruction is encountered with violent cramps, borborygmi, and occasional attacks of vomiting and constipation; a palpable mass may be felt [24] and the obstruction may be complete.[2] In the fourth type intractable fistulæ follow the operative drainage of a supposed appendix abscess.[30 42] It is probable that these types represent phases of one progressive lesion [16] and that therefore an overlap in the symptomatology is to be expected.

The age-period is worthy of note. Crohn [19] originally described the condition as chiefly affecting young adolescents, but cases have since been reported involving all age-groups, even the sixth and seventh decade.[10 50] Our patient was aged 63. Rockey [28] reported four cases in children operated on for appendicitis of ages 5, 9, 11, and 19 in which there was a hypertrophy of the terminal ileum with mesenteric adenitis and in which tuberculosis seemed to be excluded. The possibility of a familial incidence has been suggested by Crohn,[18] who records two cases in children of the same parents.

Diagnosis.—Almost all of the reported cases seem to belong to the third group described by Crohn and therefore have been reported under the heading of chronic cicatrising enteritis. The cicatrisation does not usually give rise to a gross form of obstruction, and in the absence of a palpable mass the clinical picture is often indefinite and the diagnosis difficult [10]; in our case, complicated by a severe mental illness, the diagnosis was not made during life. In these circumstances the diagnosis is often one by exclusion but Galambos and Mittelmann,[31] Kantor,[41] and Weber [44] have described X ray appearances which they believe to be typical and diagnostic when the terminal ileum is involved.

The differential diagnosis is usually from neoplasms, malignant and benign [43]; the specific granulomata, including hyperplastic tuberculosis, lymphadenoma, actinomycosis, and syphilis; and the localised inflammatory masses associated with chronic infection of the appendix and Meckel's diverticulum.[19 38]

Chronic intussusception[10] and twisted ovarian pedicle[20] have been simulated.

Ætiology.—Chronic cicatrising enteritis is not the result of any single ætiological factor. It is a particular clinical example of granuloma of the intestine

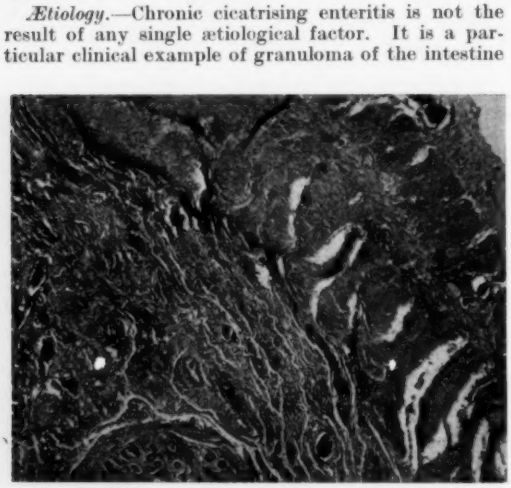

FIG. 4.—Low-power photomicrograph showing submucosa thickened with cellular infiltration and congestion.

of non-specific origin. It is believed that in every case an initial factor impairs the vitality of the gut wall and allows bacterial invasion from the lumen of the gut. The bacterial invaders are probably numerous in kind, but all produce a similar type of granulomatous reaction. In that sense all the lesions are non-specific.[3]

Mock classifies fully all the possible factors producing the local lessening of resistance which is followed by the production of these granulomata in the alimentary tract. Of these factors some are more or less theoretical, others more substantiated by the facts of the recorded cases. In the substantiated cases foreign bodies and infections appear to be outstanding. The former include fishbones, cherry pips, fruit cake, sponges in the abdomen, and particularly ligatures and sutures from a preceding operation. The latter include specific bacterial infection (e.g., bacillary dysentery), protozoal infections (e.g., amœbic dysentery), and metazoal infections (e.g., worms). Diverticulitis and ulcerative colitis sometimes precede a localised granuloma.

In the small intestine the foreign-body factor was at first thought to predominate; preceding operations were stressed in the case-histories and suture material was incriminated. More recently this factor has been found inadequate and suggestions have been made that mechanical factors operate either directly on the gut or on its blood-supply. Chronic recurrent self-reducing intussusception at the ileocæcal valve, or an upset of local circulatory conditions by an appendicitis, might account for a terminal ileitis, but they would not account for lesions higher up in the intestine.

The case recorded here had a history of alimentary infection by *Entamœba histolytica*, *B. typhosus*, *B. paratyphosus*, and *Giardia lamblia*. There was no evidence of foreign body and no abdominal operation had been performed. The other possible primary factors suggested by Mock and others,[3 5 34 61] such as trauma, mechanical interference with the blood-supply, and extension of infection from extra-alimentary sources, were not found. The involvement of small intestine alone would appear to exclude *Entamœba histolytica*: the widespread involvement of the small intestine is against *B. typhosus* and *B. paratyphosus*. The giardia infection was present up to the time of death and giardia cysts were frequently and easily found in the stools. *G. lamblia* is a recognised invader of the small intestine,[49 62] and attention has recently been directed to the widespread lesions caused by this organism in the small intestine by Little,[47] Lyon and Swalm,[48] and Paula e Silva.[55] In view of this work it is suggested that the giardia infection was the primary cause of the granulomata found in this case.

Pathology.—The pathological lesion in chronic cicatrising enteritis tends to be localised and may particularly affect the terminal ileum. Its localisation may be anywhere in the small intestine and a similar condition has been noted in the stomach.[45] The lesion may be multiple.

The lesion is a chronic inflammation of the wall of the gut with considerable stricture of the lumen. The inflammation involves the mesentery and the lymph glands may be enlarged.[7 11 24] In the case reported no lymph nodes were involved. Ulceration of the mucous membrane may occur. Ballooning of portions of the gut has infrequently been observed.[38] It was present in this case.

Microscopically the lesions show a fibroblastic reaction with infiltration of polymorphonuclear leucocytes, round cells, and plasma cells.[14 15 24 26 33 35 37] The inflammation involves all layers of the wall and is attended by fibrosis. Giant cells have been recorded,[10 11 15 16 19 24 34 39] sometimes incorporating hard crystalline bodies of variable shape and indeterminate origin,[6 26 33 53 65 66] although regarded by some as of lipoid nature.[39] Their restriction to the intermuscular plane and juxtaposition to Auerbach's plexus is an outstanding feature of this present case. It is suggested that the involvement of Auerbach's

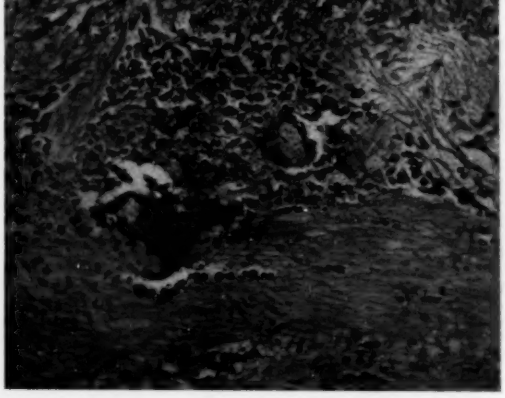

FIG. 5.—High-power photomicrograph showing the intermuscular plane. Giant cells with crystalline bodies are seen adjacent to Auerbach's nerve ganglion.

plexus by the inflammatory process accounts for the ballooning of portions of the gut.

The lesions do not appear to have any anatomical arrangement and show none of the features of tuberculosis.[27 53] Hyperplastic tuberculous lesions of the ileum are rare and it is probable that some of the reported cases are really non-specific granulomata.[53 65] In the present case the lesions reach as high as the

upper jejunum and a primary tuberculous lesion in this situation would be extremely rare.

The occurrence of metaplasia in the epithelium of the inflamed gut has been suggested by Donchess and Warren,[24] and a possibility of early carcinomatous change. This would be a further example of malignant change occurring at a focus of chronic infection.[27]

Treatment.—Treatment at present consists of excision of the affected areas,[11 26 34 35 38] with or without a short-circuiting operation. The fact that so many of the reported cases had been operated on previously for appendicitis[15 18 19 21 33 39 53 66] seems to indicate the advisability of exploring the terminal and lower ileum in all cases of chronic appendicitis that come to operation.

SUMMARY

(1) A short historical survey of granulomata of the intestine is given, with special reference to a group involving the small intestine, isolated by Crohn. (2) The present case is one of chronic cicatrising enteritis and its symptomatology is discussed with reference to four clinical types. (3) Diagnosis is usually by exclusion. Typical X ray appearances have been described when the terminal ileum is involved. (4) Ætiologically many primary factors may operate, all producing an infective granuloma of non-specific type. It is suggested that the giardia infection was the primary factor in the present case. (5) Pathologically strictures and dilatations of the gut are met with. Microscopically giant cells incorporating foreign bodies of indeterminate origin are seen in a picture of chronic inflammation. In the present case they are in juxtaposition to the nerve-cells of Auerbach's plexus. (6) Treatment consists in excision of the affected parts.

Thanks are due to Dr. Edward Mapother for permission to publish this case; to Dr. P. H. Manson-Bahr and Dr. E. ff. Creed for their valuable help; and to Mr. Geary for preparing the specimens. The photographs were obtained by the aid of Dr. H. A. Ash. We are responsible for the opinions offered.

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ACRIFLAVINE AS A URINARY ANTISEPTIC

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Acriflavine has been used as a general and urinary antiseptic for some years; its action is directly antiseptic, not depending upon excessive acidity or alkalinity of the urine, although higher antiseptic values are obtained undoubtedly in alkaline than in acid urine. In the venereal diseases department of the General Hospital, Birmingham, it has been used intravenously in the routine treatment of acute gonorrhœa in 4985 cases. Numerous other so-called urinary antiseptics have also been used but in none has the improvement been so great as with acriflavine.

The application of this drug has not been confined to gonococcal infection; many cases of *Bacillus coli* infection of the urinary tract have also been treated successfully.

Similar reports have been made from time to time by other observers. In 1921 Davis [1] stated that "by a study of 204 aniline dyes, with only two (proflavine and acriflavine) was it possible to demonstrate the secretion of antiseptic urine following intravenous injection." In 1926 Jausion and Vaucel [2] claimed very successful treatment of gonorrhœa with intravenous acriflavine alone. Further, in 1932 Davis and Sharpe [3] said that "acriflavine exerts an antiseptic action in normal urine which is uniform and consistent to a surprising degree." They also found that alkalinity is "quite essential for consistent and dependable results."

It should be stated that acriflavine as a urinary antiseptic must not be looked upon as the sole weapon in treatment; one must realise that the urinary tract is not a simple tube, but one into which there are many glandular openings, especially the ducts of the prostate and urethral glands. Obviously it is sometimes impossible to reach the real site of infection with a urinary antiseptic, although one may cleanse the surface of the tract temporarily, and it seems desirable, therefore, in all cases of urinary infection to attempt to increase a patient's resistance to a particular organism by, for example, vaccine treatment.

GONORRHŒA

As a routine all cases of acute gonorrhœa in the male have had intravenous injections of 2–4 c.cm. of a 2 per cent. solution of acriflavine in sterile distilled water. Ten such injections have been the standard course (one injection being given every second or third day). The patient has been instructed not to take large amounts of fluid, so that a higher concentration of acriflavine shall be obtained in the urine. The necessity for this precaution is well brought out by the experiments of Miller and Chu.[4] (In accordance with what has been stated above, supplementary treatment, such as vaccine, irrigation, and potassium citrate grs. 60 t.d.s. to ensure an alkaline urine, has also been given.)

The intravenous route has always been chosen in order to get the immediate and maximum effect upon the urinary tract. In my opinion, one does not get such good results with acriflavine by mouth, and it seems more than probable that a large part of the acriflavine given by mouth will not be excreted through the kidneys at all.

Results.—In the 4985 cases of acute gonorrhœa which have been given acriflavine, perhaps the most noticeable feature has been the short duration of the urethral discharge; as a rule the discharge ceases in 7–10 days, which is very much less than is usual in the average case treated by irrigation alone. If the posterior urethra is already affected, acriflavine, which is being continuously excreted into the bladder, helps to clear the cystitis; while if the posterior urethra is not affected, the acriflavine apparently protects it.

It is obviously not possible with such a large number of cases to give accurate percentages of cure within a particular time; for many of the patients will not attend for tests of cure. But the very decided impression has been that the duration of the actual infection, like the duration of the initial discharge, has been much shortened by acriflavine.

B. COLI INFECTIONS OF THE URINARY TRACT

It is quite common for cases of *B. coli* infection to reach a venereal diseases clinic, sent up as possible gonococcal infections, perhaps because of epididymitis or frequency of micturition. Table I. shows the results in consecutive cases of bacilluria treated with acriflavine and also with an autogenous vaccine.

TABLE I

B. coli *Bacilluria treated with Acriflavine and Autogenous Vaccine*

Case.	Duration of urinary trouble before treatment.	Number of injections of 2 per cent. acriflavine.	Clinical result.	Pathological result (cultural).
1	2 months.	8 × 4 c.cm.	Cured.	Cured.
2	4 ,,	10 × 4 ,,	,,	,,
3	10 days.	8 × 3 ,,	,,	,,
4*	3 months.	8 × 4 ,,	,,	*B. coli* still present.
5	3 ,,	10 × 2 ,,	,,	Cured.
6	1 year.	10 × 4 ,,	,,	,,
7*	5 months.	20 × 4 ,,	,,	,,
8	3 weeks.	30 × 4 ,,	No symptoms.	*B. coli* still present.
9	2 days.	8 × 4 ,,	Cured.	Cured.
10*	7 years.	28 × 4 ,,	Failure.	*B. coli* still present.
11	3 weeks.	8 × 4 ,,	Cured.	Cured.
12	4 days.	6 × 1 ,,	,,	,,

* Case 4 developed jaundice; no more acriflavine given.
* Case 7.—*B. coli* still present after first course of ten injections.
* Case 10.—Patient relapsed after being clear of *B. coli* in urine and clinically well.

These results are very strong evidence of the value of acriflavine, and compare favourably with those obtained by the use of a ketogenic diet [5] or mandelic acid.[6]

EXPERIMENTAL

Acriflavine can be showed to have an extraordinarily high antiseptic value in regard to the gonococcus. I find that a dilution of 1 in 20,000 will kill the gonococcus in fifteen minutes. Its action upon such organisms as *B. coli* is, as one would expect, much less; some strains are only killed in thirty minutes in a dilution of 1 in 200.

It seems reasonable to expect that the urine of a patient who is receiving an antiseptic for a urinary infection should show definite antiseptic properties. In order to test this property, the urine of two patients was examined:—

(*a*) A patient who was given 3 c.cm. of acriflavine (2 per cent.) intravenously and passed urine within half an hour.

(*b*) A patient who had been on hexamine grs. 10 and ammonium chloride grs. 15 t.d.s. for a week.

Four cubic centimetres of each of these urines were added to 24-hour cultures of gonococci; the suspensions of these gonococci in the urines to be tested were then put in the incubator at 37° C., and to each was added three drops of serum to ensure growth if antiseptic action had not taken place. Subcultures were then made at intervals of one, two, three, and four hours. The results are seen in Table II.

TABLE II

Growth of Organisms in Urine of Patients receiving (a) *Acriflavine and* (b) *Hexamine and Ammonium Chloride*

Hours	1	2	3	4
Urine A	+	−	−	−
Urine B—pH 5·4 (after addition of serum) ..	+	+	+	+

+ = Growth of gonococci } after 48 hours'
− = No growth of gonococci } incubation.

The tests were repeated on other patients with the same results and appear to confirm the clinical findings of the value of acriflavine as a urinary antiseptic.

PREPARATION OF ACRIFLAVINE

For nearly five years the acriflavine used in the above series was very satisfactory from a tolerance standpoint. There were a few cases of dermatitis on parts exposed to sunlight, such as face and hands, and also an occasional case of toxic jaundice; this was in accord with the findings of Jausion and Vaucel [2] and many others. In 1932–33, however, jaundice began to occur with great frequency, and it was quite obvious that it would not be possible to continue with the drug, at any rate in the same dosage as previously, although it seemed to be of great value in the treatment of urinary infections. Other observers were obviously troubled in a similar way, and Hughes and Birch [7] in 1933 stated that they had abandoned flavine therapy owing to toxic effects. Correspondence in THE LANCET in 1931 [8] suggested that the acriflavines which were being used were not chemically identical.

Such contradictory experiences forced us to the conclusion that the acriflavine used in 1928 differed in some important way from that used in 1933, and in 1933–34 the products of different firms were tried. The prevalence of jaundice nevertheless continued.

In February, 1935, Imperial Chemical Industries Ltd., Dyestuffs Group, were asked to investigate the matter, and they have succeeded in supplying an acriflavine which is apparently non-toxic.* Since June, 1935, 300 patients have been given this new product intravenously according to the method described above, and in only 2 cases has there been any evidence of liver damage: in these there was transient jaundice for 48 hours only, and this may have been due to other causes. Every case has been investigated for signs of hepatic damage, and before each injection the urine has been examined for urobilinogen; this has been conspicuously absent whereas in 1933 it was found with great regularity.

In my opinion, patients who are receiving acriflavine should always be tested for the presence of urobilinogen in the urine and use of the drug should be discontinued if it is found.

* This preparation, Acriflavine (Intravenous), may be obtained from The British Drug Houses Ltd.

(*References at foot of next column*)

INBORN AND FAMILIAL TENDENCY TO THE DEVELOPMENT OF HEPATIC CIRRHOSIS*

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CASES of hepatic cirrhosis in children, not due to alcohol or congenital syphilis or any known cause of cirrhosis, are usually regarded as the manifestation or one of the manifestations of a congenital-developmental disease, and the occasional familial incidence of cirrhosis has often been adduced in support of this view. In this paper I shall shortly discuss the data in favour of there being an inborn tendency to hepatic cirrhosis (a congenital tissue or organ inferiority of the liver, as Prof. Brouwer would say, destined to manifest itself by obvious changes in postnatal life, with or without known exciting causes), and shall arrange my remarks under two headings: (I.) examples of the familial incidence of hepatic cirrhosis, in which the cirrhosis has not been due to any known exciting cause, such as alcohol or syphilis, or in which an inborn familial tendency to the disease may be presumed because an exciting cause such as alcohol, though present in one of the affected members of the family, was absent in others; (II.) examples of hepatic cirrhosis accompanying and probably constituting a part of acknowledged diseases of the congenital-developmental class.

But first I must explain what I mean by *diseases of the congenital-developmental class*. Under congenital-developmental diseases and abnormalities I include all truly inborn abnormalities and constitutional diseases, whether obvious at birth or manifesting themselves later at various ages. Amongst the more easily recognised ones are: hæmophilia; hæmolytic (acholuric) jaundice, and some other familial abnormalities of the blood (and hæmopoietic system); alkaptonuria, congenital porphyrinuria, and other inborn abnormalities of metabolism, such as Gaucher's disease, the Niemann-Pick disease, amaurotic family idiocy, familial cutaneous xanthomatosis, the Hand-Schüller-Christian lipoid-granulomatosis, von Gierke's hepatomegalic glycogen-storage disease, &c.; renal glycosuria (apparently harmless in itself); familial optic nerve atrophy and other diseases, dysplasias and dysbiotrophic conditions in which the eyes are affected; numerous hereditary diseases and dysplasias of the skeletal (bone and cartilage), muscular, vascular, and nervous systems; and many minor conditions, including inherited abnormalities of the skin and its appendages; food-idiosyncrasies and allergic peculiarities. It is almost certain that many

* Some remarks on this subject, which are here amplified, were made by Dr. Parkes Weber in the discussion on Prof. B. Brouwer's paper on the Spleen, the Liver, and the Brain, at the meeting of the section of neurology of the Royal Society of Medicine on Jan. 16th, 1936.

(*Continued from previous column*)

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diseases, which are rarely obviously inherited—such as hypertrophic pyloric stenosis (which may occur occasionally in twins or recurrently in more than one child of the same parents) and Hirschsprung's megalocolon congenitum and aortic isthmus stenosis—also really belong to the group under consideration.[1] All inborn constitutional diseases belong to the congenital-developmental group, even when their manifestations are delayed till long after birth, till puberty, middle age, or even later. It is because the manifestations are often delayed till long after birth that I prefer to speak of this group of diseases as the congenital-developmental group, and not as the congenital group.

Known hereditary or familial incidence may often be absent in diseases and abnormalities of the congenital-developmental class, but its occasional presence is sufficient to stamp the disease or abnormality as belonging to the class. Thus, the puzzling disease "lipodystrophia progressiva" apparently belongs to the class and seems to be a "dysbiotrophy" (if I may use the term, instead of "abiotrophy" of Gowers) of the subcutaneous fat over the head and upper part of the body, chiefly affecting females. L. Barraquer-Ferré [2] has lately narrated the case of a female whose mother and maternal grandmother were likewise affected. The disease, though potentially present at birth, may be "delayed" in its appearance long enough to allow of a female not being prevented by her shrunken death's-head-like face from finding a mate. Some would probably prefer to express themselves by saying that the lipodystrophia was potentially present at birth as a congenital tissue inferiority (Gewebsminderwerdigkeit).

I.—EXAMPLES OF THE FAMILIAL INCIDENCE OF HEPATIC CIRRHOSIS, NOT DUE TO ANY KNOWN EXCITING AGENT OF THE DISEASE

Various cases of familial hepatic cirrhosis have been published.

At the Royal Society of Medicine (section for the study of disease in children) in February, 1934, Prof. F. Langmead [3] demonstrated cirrhosis of the liver with splenomegaly in three brothers, aged 9, 11, and 13 years respectively. In the boy, aged 11 years, the diagnosis was subsequently confirmed by microscopic examination ("biopsy"), which showed typical multilobular cirrhosis of the liver. Langmead referred to Byrom Bramwell's account (1910) of a family with hepatic cirrhosis.[4] Byrom Bramwell's patient, a boy, aged 9 years, had ascites, œdema, jaundice, fever, and a large liver, and the necropsy showed typical "hob-nailed" cirrhosis. Three other members (girls) of the family of seven apparently died from hepatic cirrhosis. Langmead also mentioned J. Szanto's [5] three cases of multilobular cirrhosis of unknown origin, with splenomegaly, in a family of ten. In one of these cases the diagnosis of hepatic cirrhosis was confirmed by necropsy (a boy, aged 15 years) who likewise had genital hypoplasia.

F. J. Poynton and W. G. Wyllie [6] in 1926 described two cases of congenital familial hepatic cirrhosis of unknown ætiology in a brother and sister, aged 9 years and 4 years respectively, but the diagnosis of von Gierke's hepatomegaly (hepatomegalia glycogenica) was subsequently suggested.[7]

In 1903 I recorded the necropsy on a girl, aged 14 years, with biliary cirrhosis ("Hanot's disease") of the liver.[8] Her sister was said to have died at the age of 19 years with similar symptoms. J. Dreschfeld [9] met with hypertrophic hepatic cirrhosis in two brothers, one of them was a drinker and the other temperate. Sir William Osler [10] mentioned two brothers in America affected with Hanot's cirrhosis. Boinet [11] wrote of a family in which the father and two children had biliary cirrhosis (Hanot's type) and three other children had enlarged spleens. J. Finlayson [12] spoke of three brothers and a sister, two of whom had cirrhosis of Hanot's type; another had enlargement of the liver and spleen, with icterus, and the remaining one had slight jaundice. Hasenclever [13] recorded an instance of three members of one family, a boy and two of his sisters, having typical hypertrophic biliary cirrhosis.

II.—EXAMPLES OF HEPATIC CIRRHOSIS ACCOMPANYING AND PROBABLY CONSTITUTING A PART OF ACKNOWLEDGED DISEASES OF THE CONGENITAL DEVELOPMENTAL CLASS

Progressive lenticular degeneration (Kinnier Wilson's disease).—Wilson's disease is a chronic progressive degeneration of the lenticular nuclei of the brain combined with a cirrhosis of the liver, which has been usually latent during life and first discovered at the post-mortem examination. Familial incidence in this rare disease has been emphasised by Wilson himself, as well as by later authors. The evidence seems to me to point to the disease being most probably a combined "dysbiotrophy" of the lenticular nuclei and the liver, and the hepatic constituent of the combined condition in some cases does give rise to obvious clinical symptoms so as to be recognised as a form of familial cirrhosis even during life.[14] In some cases the lenticular nuclei or the liver may be only slightly affected, but it seems very unlikely that any of the above-mentioned cases of familial hepatic cirrhosis in children were of the nature of incomplete Wilson's disease with the liver only affected.

Hæmochromatosis.—The occurrence of hepatic cirrhosis ("pigmentary cirrhosis of the liver") as a part of hæmochromatosis or "bronzed diabetes" is too well known to need insistence. The site of the greatest visceral changes varies in different cases, and the characteristic liver changes may occur even without very marked cutaneous pigmentation. The occasional familial incidence of the disease has been pointed out by J. H. Sheldon,[15] R. D. Lawrence,[16] and others, so that hæmochromatosis must be classed amongst the rare inborn abnormalities of metabolism, such as alkaptonuria, pentosuria, cystinuria, congenital porphyrinuria, the inborn abnormalities of lipoid metabolism, &c., which I have above referred to. Indeed, a special analogy may be pointed out in regard to von Gierke's hepatomegalic glycogen-storage abnormality, in as much as in the latter disease different viscera (e.g., the heart) may be specially involved in different cases.

Erythræmia.—Though I think that erythræmia of the Vaquez-Osler type is, like the leukæmias, due to a neoplastic change in the bone-marrow, a familial incidence of the disease has been reported in quite a number of cases.[17] It may be presumed to develop (under the action of unknown agents) in individuals having an inborn constitutional predisposition. Hepatic cirrhosis is a recognised though only occasional complication of erythræmia, and seems in some cases to occur independently of any special agent such as phenylhydrazine, which may have been used in the treatment.[18]

Telangiectasia of the Osler type.—Very many valuable papers have been written on this disease, including regular monographs with copious bibliographies, by H. I. Goldstein, who was, I believe, the first to call it the "Rendu-Osler disease," by which name it is now known in France. In many cases, though

in far from all, there has been striking hereditary incidence. I was fortunate enough to be able to describe a typical familial example in 1907[19]; and in 1924[20] I alluded to the possible analogy and association of the telangiectatic condition of the skin and mucous membrane of the nose and mouth with certain hæmorrhagic telangiectatic conditions in the stomach, intestines, kidneys, or lungs. In fact, it is quite possible that in rare cases the typical cutaneous telangiectases may be altogether absent. Very few complete post-mortem examinations have been published, but recently Ludo van Bogaert and J. H. Scherer[21] found hepatic cirrhosis present in a typical familial case of the Rendu-Osler type of telangiectasia. From what I remember of the progress of the patient I described in 1907 there may well have been visceral disease and perhaps hepatic cirrhosis present at the end. I have been told of an as yet unpublished case in which hepatic cirrhosis was found at the post-mortem examination; so it was also in a remarkably atypical case, the liver and spleen from which were recently (Jan. 13th, 1936) demonstrated by Mr. R. Davies-Colley at the Medical Society in London. The telangiectasia in this disease must be regarded as due to a congenital-developmental dysplasia of the small blood-vessels, potentially present at birth, though often not manifesting itself by obvious changes till after puberty. What is the relationship of the hepatic cirrhosis, when present? Is it the result of an associated developmental dysbiotrophy of the liver—i.e., a congenital tissue or organ inferiority in the sense intended by Prof. B. Brouwer and others? The subject is complicated by the well-known fact that in advanced or active hepatic cirrhosis there is a tendency for the patient to develop cutaneous telangiectases on the face and hands, notably those of the spider-like type, as I have had occasion to observe.

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MODERN VIEWS ON HYPERTROPHY OF THE PROSTATE

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THE prostate is a complex gland situated beneath the orifice from which the bladder is emptied and including the prostatic sinus (uterus masculinus). It is composed of tubular-gland tissue embedded in a stroma of connective tissue and unstriped muscle-fibres. The prostate increases in size with age, and may hinder the evacuation of the bladder and even lead to retention of urine.

In adenoma there is an increase in the glandular tissue and the prostate is enlarged and soft. In myoma, muscular tissue predominates. In fibrous degeneration the prostate is of a firm consistence and not always enlarged. In hypertrophy these three tissue elements are met with in varying proportions.

According to the latest statistics, about a third of men aged 60 years and upwards suffer from the prostate and for a long time treatment has been sought to cure or relieve them.

Historical

The first description of hypertrophy of the prostate dates from the sixteenth century. On the ground that hypertrophy of the prostate is a manifestation of old age closely related to the sexual function, surgeons have long endeavoured to cope with it through the medium of the genital system. In 1884 Lannois, in France, suggested castration, but although the clinical results were satisfactory (Burkhard claimed success in 69·2 per cent., Cabot 83·6 per cent., and White 87·2 per cent.) the psychological reaction and ensuing cachexia were so alarming that the succeeding generations of surgeons abandoned this method of treatment. Only in veterinary surgery is hypertrophy of the prostate dealt with by means of castration. Unilateral castration (Albarran, Motz, Pavone) does not lead to any improvement. Harrison in 1893 substituted for castration section of the vasa deferentia, but without obtaining any results. Later Bier, also unsuccessfully, ligatured the vessels leading to the testicle.

As a result of advances in surgical technique, prostatectomy became at the beginning of the present century the routine treatment of prostatic obstruction, and for a time interest in other methods of treatment was lost. It was revived when Romeis reported a marked reduction in the size of the prostate of a man of 68 following the implantation of the testicle of a young man of 22. Since then the close connexion between prostatic hypertrophy of old age and diminution in the internal secretion of the testicle has been confirmed by many observations on animals.

Experimentally, Steinach succeeded in greatly increasing the internal secretion of the testis by blocking the external secretion, but when bilateral ligature of the vas deferens was applied to prostatic enlargement the results were negative. In 1927 I endeavoured to influence prostatic hypertrophy by ligature of the efferent ducts where they emerge from the testis at the level of the head of the epididymis. This produces the maximum increase in the internal secretion of the testis (Steinach). The attempt was more successful, the size of the prostate being diminished in the majority of cases.

In 1933 Landau discovered in cats a constant sympathetic ganglion situated in the connecting capsule surrounding the efferent ducts in the head of the epididymis. This corresponds to the point where the vasa deferentia penetrate the posterior surface of the testis and is the site of my ligature. Nicod found a ganglion in man at the same point. Landau and Heitz-Boyer are both of the opinion that the action of the ligature on the prostate is of a reflex nature, while I [1] believe it to act through the endocrine system.

In 1933 Laqueur and van Cappellen published the results obtained in hypertrophy of the prostate by daily injections of 4–20 units of testicular hormone (Hombreol). In the same year Lacassagne administered 500 units a week of the hormone of the female sex gland (œstrin) to male mice for a period of five months and observed a considerable development of the posterior lobe of the prostate, retention of urine, and secondary hydronephrosis. His observations were confirmed in 1934 by Burrows and Kennaway. Lacassagne and de Jongh also made the interesting observation in 1933 that injections of benzoate of folliculin (œstrin) in young mice, in normal adult mice, and castrated adult mice produced a canceroid epithelial proliferation of the posterior lobe of the prostate, which proved fatal in about six weeks. In 1934 Courrier and Gros asserted that they found marked enlargement of the prostate and seminal vesicles in monkeys treated with folliculin and at the same time an extraordinary development of the unstriped muscle of these organs. In the following year there appeared very interesting articles on the enlargement and alteration of the prostate and seminal vesicles obtained by injecting œstrin into monkeys (Parkes and Zuckerman) and into rats (Laqueur and de Jongh).

Experimental Work on Animals

The fact that hypertrophy of the prostate has been observed in monkeys, dogs, and rats has made it possible to throw light on the subject by means of animal experiments. Long ago John Hunter proved that when castration was carried out in young animals the prostate did not develop, and that after the operation in adult animals it atrophied. Subsequent work has shown that the prostatic secretion stops 53 days after removal of the testicle (Gley, Pézard). The same occurs after a severe lesion of the testicles produced by radium or X rays. When Lower caused anæmia of the testicles by ligature of the arteries he obtained not only a pronounced degeneration of the tubular elements and the interstitial cells, but also a secondary atrophy and sclerosis of the prostate.

All these experiments show that the prostate atrophies and degenerates as soon as the influence of the testicles is removed by castration, by the action of radium and X rays, or by the cutting off of the blood-supply. Lower found that when he subjected the sex glands of rats or dogs to the influence of small doses of radium or X rays the testicles underwent a 50 per cent. reduction in size and weight, the tubules being completely destroyed, but the interstitial cells of Leydig which are more resistant to radiation increased in number. Associated with these changes there occurred an enlargement of the prostate and seminal vesicles. Exactly the same results could be obtained from bilateral operative cryptorchism, that is to say, returning the testicles into the animal's abdomen.

[1] Schweiz. med. Woch., 1934, lxiv., 557.

These two experiments prove that destruction of the germinal epithelium and proliferation of Leydig's cells lead to hypertrophy of the prostate. After the vasa deferentia of rats and dogs had been ligatured without damaging the blood-vessels Lower reported that the testicles, prostate, and seminal vesicles showed no change after several months' observation. He therefore concludes that occlusion of the vas deferens does not have any influence on the testicles or prostate.

Steinach, on the other hand, claimed that vaso-ligature enabled an old animal which had previously micturated with difficulty to empty its bladder, and Slotopolsky stated that after Steinach's ligature II. the old germinal epithelium disappears but is replaced by a newly formed germinal epithelium. From this we can infer that the renewal of the germinal epithelium and reabsorption of its secretion by the circulating blood are followed by a shrinkage of the hypertrophied prostate. A variety of hormones has been used experimentally on animals in order to study their action on the prostate. Whilst research on this subject is still incomplete, the most important results may be summarised as follows:—

I

Influence of the Male Hormone on the Development, Preservation, and Shrinkage of the Prostate

It is known that there are many female hormones and to-day it is admitted that there are also many male hormones. According to McCullagh the male sex gland secretes two hormones:—

(*a*) A fat-soluble hormone, probably secreted by the interstitial cells of Leydig, which stimulates the development and function of the accessory sex glands including the prostate.

(*b*) A water-soluble hormone, supposed to be produced by the germinal epithelium, which exerts an inhibitory action on the anterior lobe of the pituitary and the production of prolan which retards the development of the prostate.

Further, there has been found in the urine of men and even women a male hormone (androstanediol) which, according to Laqueur, is not identical with the hormones of the testis (androsterone) and is chiefly responsible for the growth of the cock's comb in fowls.

II

Influence of the Female Hormones, in particular the Œstrogenic Hormone (Folliculin), on Changes in the Prostate

The female follicular hormone (folliculin, œstrin) is normally present just as well in the male as in the female.

In the mouse, small doses of follicular hormone cause typical signs of growth, not only of female organs like the vagina, uterus, tubes, and mammæ, but also of the male organs—prostate, seminal vesicles, and ampullæ of the vasa deferentia. By increasing the dose of folliculin the quantitative physiological balance between the male and female hormones is upset on the female side and pathological tissue proliferations appear in the prostate, seminal vesicles, and ampullæ of the vasa deferentia. There is an extensive increase in the unstriped muscle which becomes thickened; at the same time connective tissue and proliferations showing keratinisation appear in the posterior part of the prostate and hinder micturition, so that de Jongh always found the bladder distended in the male mouse, and in rats and guinea-pigs treated with Menformon the seminal vesicles were ten times as large.

The proliferation takes place chiefly in the posterior region of the prostate, which corresponds exactly to the group of glands which develops spontaneously in old men, causing hypertrophy of the prostate (de Jongh). If the injections of menformon are stopped the prostate shrinks completely in mice in three days' time (de Jongh).

Substances like benzoylate of menformon or benzoate of folliculin are even capable of causing growths similar

to cancer in the posterior part of the prostate (see results obtained by Dodds, Lacassagne, de Jongh). It is therefore possible to start a pathological new growth in the prostate with a female hormone.

All these changes were absent when de Jongh administered both male (hombreol) and female (menformon) hormones together. The prostate was unaltered.

III

Influence on the Prostate of the Hormone of the Anterior Pituitary Lobe: Prolan

Lower, working with sexually immature rats, succeeded in obtaining premature development of the sex glands, prostate, and seminal vesicles by administering prolan B, the hormone of the basophil cells of the anterior pituitary lobe. In adult animals he obtained hypertrophy of the prostate (adenoma) and proliferation of the seminal vesicles by the same means. Extracts of the anterior pituitary lobe were found to be just as active as extracts of the urine of pregnant women.

On the other hand, Engle and Smith found that removal of the anterior pituitary lobe in young rats checked the development of the gonads, prostate, seminal vesicles, and Cowper's glands.

Free secretion of the sex glands inhibits the effect of prolan and for this reason the prostate develops up to puberty and again after 50. Decrease in the quantity of hormone from the sex glands stimulates the secretion of prolan and consequently leads in advancing age to hypertrophy of the prostate.

The loss of the sex glands (castration) is followed by hypertrophy of the anterior lobe of the pituitary,[2] the cells of which become rapidly exhausted by the excretion of prolan. This secretion though temporarily increased loses all action on the prostate, for, according to the majority of authors, prolan does not act directly on the prostate but indirectly through the medium of the sex glands.

Lower anastomosed the blood-vessels of a rat recently castrated with those of a normal rat. Although the pituitary of the normal rat showed no alteration, the sex glands, prostate, and seminal vesicles were hypertrophied (by the action of the hypertrophied anterior lobe of the pituitary of the castrated animal). These changes only occurred after ten days. Thirty days later the prostate had increased 40 per cent. in size and weight and was composed chiefly of gland tissue (adenoma).

The same results were obtained by injections of the hormone secreted by the basophil cells of the anterior lobe of the pituitary.

In old age, which may be regarded as Nature's method of performing a gradual, incomplete, and discreet castration, the hormone of the sex glands diminishes imperceptibly so that the pituitary has plenty of time to produce its prolan and evoke hypertrophy of the prostate.

The above results may be summarised as follows: Male hormone stimulates the normal development of the prostate. Female hormone produces the formation of fibromyoma of the prostate, and benzoate of folliculin a proliferation of the pavement epithelium of the prostate. Basophil hormone of the anterior lobe of the pituitary (prolan) gives rise to prostatic adenoma.

Prostatic Enlargement in Man

In man also the hormone of the male sex glands regulates the development, preservation, and functions of all the accessory glands, including the prostate. The human prostate attains its normal size at puberty equally with the growth of the testicles and the development of the secretion of the interstitial cells of Leydig. At the onset of the activity of the germinal epithelium the development of the prostate ceases so that the gland remains stationary from puberty to the sixth decade. From the age of 50 the testes become smaller and softer. While the number of the interstitial cells of Leydig remains unaltered, the secretion of the germinal epithelium and with it the production of spermatozoa gradually diminishes and perhaps is stopped completely. At the same time the prostate renews its development.

If the secretion of the interstitial cells of Leydig is normal the prostate is developed by puberty and keeps within normal limits as long as the secretion of the germinal epithelium is sufficiently plentiful. If the secretion of the interstitial cells of Leydig is lacking the prostate cannot develop. This is the reason why hypoplasia of the prostate is met with in hypoplasia and anomalies of the testicles (Kaufmann) and atrophy of the prostate follows loss of the testicles. Lower found the prostate atrophied, small, fibrous, and hard in ten eunuchs in whom he was not able to demonstrate the presence of the male hormone in the urine. The relation between the testes and prostate is therefore unquestionable.

The prostate is also under the control of the hormone of the basophil cells of the anterior pituitary lobe. When with advancing age the secretion of the germinal epithelium diminishes and gradually dries up the pituitary endocrine centre seeks the aid of prolan to re-establish the function of the genital glands. But a powerful and prolonged action of prolan takes place indirectly—probably through the medium of the cells of Leydig—and promotes the formation of prostatic adenoma. The increased secretion of prolan begins as soon as it is no longer inhibited by an adequate secretion from the germinal epithelium, and continues until the basophil cells of the pituitary are gradually exhausted and replaced by eosinophil cells.

The female follicular hormone also influences the prostate. The follicular hormone is present in the testes and male urine. It stimulates the growth and normal development of the generative system, within the normal physiological limits of its action, together with the male hormone. In the male it is balanced by the hormone of the germinal epithelium, in the female by the hormone of the corpus luteum. Each hormone has its own sphere of action; thus according to de Jongh the follicular hormone controls: (*a*) In the female genital system, the muscular tissue of the vagina, uterus, and tubes; it induces the growth of pavement epithelium of the vagina and cervix uteri and finally the development of the breasts. (*b*) In the male, the plain muscle of the prostate, seminal vesicles, and vasa deferentia, together with the connective tissue of their ampullæ, the pavement epithelium [3] of the prostate, and the efferent ducts of the seminal vesicles. As de Jongh so aptly puts it: the female hormone produces "a female rut in the male prostate"; the proliferation of the epithelial, muscular, and connective tissue cells of some parts of the prostate leads to its hypertrophy.

In old age the secretion of the sex glands in man is reduced by half (Lower),[4] while the female hormone is maintained (Laqueur). In this way the physiological equilibrium between the testicular and follicular hormones is upset and the female hormone increases its effect. This accounts for the activity in the prostate, with neoplastic formations at the time of the male climacteric. The secretion of the interstitial

[2] This increase in size is explained by considering that after castration, the inhibitory action of the sex glands on the basophil cells ceases to have effect as soon as the activity of the anterior lobe of the pituitary becomes increased.

[3] The columnar epithelium of the prostate is developed under the influence of male hormone (Lacassagne).

[4] Normally a man passes 10–24 units of male hormone in the urine in 24 hours. By noting the elimination of hormone in the urine it is possible to tell exactly when an abundant secretion of male hormone becomes much diminished.

cells of Leydig being no longer balanced by that of the germinal epithelium, the prostate enlarges. At the same time there is a rise in the prolan circulating in the blood, which in turn, by stimulating the secretion of the cells of Leydig, leads to hypertrophy of the prostate. If there be a predominance of follicular hormone over male hormone, the prostate hypertrophies and degenerates.

From a consideration of the rôle which these hormones play in the development of the prostate we can conclude that :—

(1) The normal secretion of the interstitial cells of Leydig contributes to the normal development of the prostate.

(2) The pituitary prolan as well as the secretion of Leydig's cells if excreted for a considerable time in increased amounts produces adenoma of the prostate.

(3) An excess of follicular over male hormone leads to the formation of a fibromyomatous prostate.

All these typical alterations of the prostate, which vary in type and degree, can only occur if there be a shortage of hormone from the germinal epithelium. Hence de Jongh's dictum "the testicle protects us from pathological changes in the prostate."

Treatment

If in old age we could augment the internal secretion of the sex glands, especially that of the germinal epithelium, not only would the increased output of prolan be stopped but the physiological balance between male and female hormones would be re-established and the prostatic enlargement reduced. With this end in view the following methods of treatment have been used :—

(1) Injections of male hormone (Laqueur, van Capellen).

(2) Transplantation of testicles of adults (Romeis).

(3) Steinach's ligature II., diversion into the blood stream of all the secretion from the germinal epithelium (Niehans).

Treatment by means of hombreol consists in giving injections of 1 c.cm. of oil of hombreol once or twice daily for three weeks. Laqueur and van Capellen claim that by this method improvement is maintained in some cases for six months. For information on the subject of treatment by means of transplantations of the testes the work of Romeis should be consulted.

In 1928, in a prostatic case aged 69, I applied an inter-epididymo-testicular ligature such as had been advocated by Steinach in order to enhance the endocrine function of the sex glands and bring about rejuvenation. The result was surprisingly good, not only with regard to the general improvement in the patient's condition but also to the effect on the prostate. I showed this case in Montreux in 1928 at the Swiss Surgical Society. The ligature between the testicle and the head of the epididymis closes the efferent ducts through which the external secretion of the testicle escapes, with the result that the hormone of the germinal epithelium as well as the hormone of the interstitial cells of Leydig pass through the pores of the albuginea into the numerous veins which surround the testicle and thus gain the general circulation. This brings about a rejuvenation of the enfeebled organism in the sense that the old cells are reabsorbed and young cells formed. Further it inhibits the abnormal development of the prostate by reducing the hypersecretion of prolan and by re-establishing the physiological balance between male and female hormones.

I described the operative technique in 1930 pointing out that the ligature must not be placed level with the superior pole of the testicle but as near as possible to the head of the epididymis, so as to avoid putting the albuginea of the testicle under tension and thus hindering the passage of the hormone of the genital glands into the blood stream. Briefly the technique is as follows :

(1) Place a silk ligature in the groove between the epididymis and the testicle, not level with the testicle but level with and even, if necessary, encroaching on the head of the epididymis. If the ligature be placed at the level of the testicle, as recommended by M. Chevassu and as is possibly the practice of other operators, the inelastic covering of the testicle is put under permanent tension whereby the internal secretion is likely to be obstructed, for the testicular hormone would no longer be able to pass through the fine pores of the albuginea and reach the veins which surround the testicle. If both means of egress for the testicular hormone—the vasa deferentia and the blood stream—are closed, an extreme hypertension is produced by stasis and even the massive necrosis described by Slotopolsky may occur. The testicle becomes swollen and acutely tender, a complication which has been wrongly imputed to Steinach's ligature II. instead of to a faulty technique.

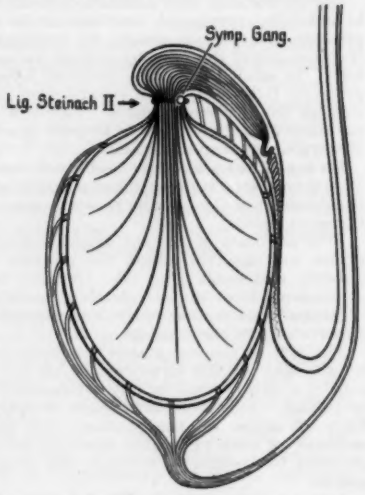

Diagram to illustrate the operative technique of Steinach's ligature II.

(2) Tie all the efferent ducts of the testicle (15 according to Kaufmann), applying the ligatures tightly but without dividing them. If the ducts are divided the external secretion would persist—which is not desired.

From 1927 up to the present I have relieved, by this very simple procedure, nearly 400 patients suffering from enlargement of the prostate. The operation can be done painlessly under a local anæsthetic, a fact that is alone sufficient to warrant for this simple procedure a wide appreciation.

RESULTS OBTAINED FROM STEINACH LIGATURE II

The general rejuvenating effect has been sufficiently observed, both in animals and man, by so many prominent men of science as to remove any doubt about it. As a frequent result of the ligature the heart is invigorated, the pulse becomes regular, the circulation improved, the arterial tension reduced to normal, headache and vertigo disappear, the appetite is improved, metabolism increased, calcareous deposits in arteries and joints are absorbed, musculature strengthened, the gait made firm and upright, sleep restored by the removal of nocturnal frequency of micturition, and clearness of thought and ability to undertake intellectual work restored. The effect of the ligature on the prostate itself is rapid in its action on spasm of the sphincter. It is less rapid in its action on the enlargement.

The painful straining gradually abates, the patient once more empties the bladder without effort, the

stream becomes more forcible, and in the majority of cases the residual urine entirely disappears. This result lasts for years and has been checked by a great number of cases in which there was no departure, either clinical or histological, of the prostate from the normal.[5]

Three of my cases will suffice to show the action of Steinach's ligature II., both on the sphincter spasm and on the hypertrophy.

1. *Spasmodic contraction of the bladder sphincter.*—Man aged 61; dysuria since the end of September and unable to pass more than 60 c.cm. urine at a time without great difficulty. Bladder distended up to the umbilicus. Ligature Steinach II. Oct. 13th, 1933. One and a half hours after the operation the patient voided 400 c.cm. urine and since then on an average 300 c.cm. four times a day. This patient had never had a catheter passed as he had a narrow and much inflamed phimosis.

2. *Hypertrophy of the prostate.*—In 1929 I performed a Steinach's ligature II. operation on a colleague aged 57, suffering from adenoma of the prostate, who was only able with great difficulty to pass a few drops of urine at a time. In order to estimate the improvement which followed, this patient measured the projection of his stream on the ground. This gradually increased from zero up to a metre which equals that of a young man. The improvement is still maintained after 6½ years.

3. A contractor, aged 64, who had suffered from difficulty of micturition for six months and had twice required catheterisation for retention. There was great hypertrophy of the prostate. Steinach's ligature II. operation was performed on Jan. 9th, 1928. No indwelling catheter was necessary. The urine was passed more easily each day and after the twenty-third day the bladder was completely emptied. Since then he only passes urine once at night and has had no mishap or dysuria. The prostate is only slightly enlarged. He has now been under observation for eight years.

[5] The normal length of the prostatic urethra is 13 mm., but in hypertrophy it may attain 5 cm. or more. Heitz-Boyer noted after Steinach ligature II. a decrease in the size of the prostate and a shortening of the urethra, elongated by hypertrophy.

Conclusions

In the last few years I have done a very large number of ligature operations. They are painless and nearly all my patients have assured me that they have felt no discomfort either during or after operation. In cases without infection the length of treatment is 12 days and the mortality has been nil.

Since the operation entails no risk, the doctor can advise this treatment at the onset of prostatic trouble before there is any indication for prostatectomy. He may also advise it as a prophylactic against the changes in the interaction of the endocrines due to age and thus avoid hypertrophy of the prostate, a condition which untreated is always progressive. For the prophylaxis and treatment of senile changes in the prostate in the future the resources of endocrinology will be more and more utilised and in serious cases the patient will no longer have to choose between the use of the catheter and prostatectomy, to which operation the famous urologist Legeu once referred as "a procedure which may prove fatal, but which will cure those it does not kill." Steinach's ligature II. can relieve a great many of the sufferers from prostatic enlargement however advanced their age without shock, pain, loss of blood, or risk.

CLINICAL AND LABORATORY NOTES

EFFECT OF THE HIGH-FREQUENCY FIELD ON SOME PHYSIOLOGICAL PREPARATIONS

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Since so-called ultra-short waves are being used extensively for medical treatment an explanation of their mode of action is required. Various authors have claimed that effects can be produced in the ultra high-frequency electric field which are not explicable on the basis of rise in temperature. A good review of the literature is given by Mortimer and Osborne.[1] One of the more important papers is by Haase and Schliephake,[2] who claim that a selective lethal action on various organisms is a specific action of ultra-short waves. This is denied by Hasché and Leunig.[3] Many of the claims made for the specific action of ultra-short waves rest on the early work of Schereschewsky,[4 5] who studied the effect of the ultra high-frequency field on mouse and fowl sarcoma and carcinoma. More recently Schereschewsky has published [6] a review which includes his earlier work and says that no case can be made out for ascribing effects as not being directly due to heat. Reiter [7] has, however, claimed that high-frequency currents of frequency $8{\cdot}82 \times 10^7$ sec.$^{-1}$ corresponding to a wave-length of 3·4 m. destroy rat tumours by a specific effect distinguishable from that of heat. The method of cooling the animal employed by Reiter is open to criticism, and Taylor [8] has shown that if a more efficient method of cooling be employed no destruction of the tumour and surrounding tissues results, when these are exposed in the high-frequency field. Moreover, he found that a low intensity without cooling of the treated parts is as effective as a high intensity with which artificial cooling is employed; further, a frequency corresponding to 4·5 m. wave-length is just as effective as that corresponding to 3·4 m.

EXPERIMENTAL WORK

As an additional proof of the fact that the action of the 3·4 metre wave-length is due to heat we have exposed the excised frog heart in the high-frequency field, the heart being immersed in a small quartz vessel containing Ringer's solution. The temperature of this solution was taken at times with a thermometer, the vessel of course being removed from the field for the purpose. Strict accuracy is not claimed for this method, but as the heat loss from the quartz vessel and contents is slow no great error is introduced. It was found that the heart continued to beat normally until a temperature above 30° C. was reached. The heart then ceased to beat but might be restored by cooling until a temperature above 35° C. was reached, when the heart failed to recover. As the behaviour of the frog's heart was exactly as it is known to be when merely submitted to increasing temperature in a bath of Ringer's solution, we conclude that the result of exposure to the high-frequency field is wholly due to heat. In case it were argued the high-frequency field acted rather on the saline solution than on the heart, a preparation was made of the thorax of a large frog containing the heart in situ, and this was suspended by cotton threads in the field with the lower part of the thorax uppermost. The heart was covered by the liver and the temperature was taken by removing the preparation from the

field and inserting the thermometer between the liver and heart. Here again the heart ceased to beat when the temperature rose above 30° C. and could be restored by cooling until the temperature reached 35° C. A preparation was then made of the head of the frog after the removal of the lower jaw and tongue, so that the ciliated epithelium covering the roof of the mouth was exposed. The activity of the cilia was tested by placing some granules of iron dust upon it and timing the progress of them towards the opening of the gullet. This preparation, placed in Ringer's solution in the quartz vessel, was exposed in the field and taken out at intervals and tested for temperature and for movement of the cilia. The cilia continued to show activity up to a temperature of 42° C., stopped at a higher temperature, but started again on cooling if they had not been heated to a temperature higher than 45° ; above this temperature they stopped for good. Similar results were obtained when the whole head was suspended in the field on a thread, the temperature was taken by inserting the thermometer in the mouth, when the field was switched off ; the activity of the cilia was observed after opening the mouth. This result also agrees with the known effect of temperature on the ciliated epithelium of the frog. Next a nerve-muscle preparation was exposed in the field in a quartz vessel in the same way. This was taken out for testing at intervals. The muscle continued to contract vigorously on faradic stimulation of the nerve up to a temperature of about 42° C. undergoing heat rigor at 45° C.

CONCLUSION

The behaviour of frog heart, cilia, and nerve-muscle preparation exposed in the high-frequency field corresponding to 3·4 m. wave-length is shown to be exactly the same as when merely heated in Ringer's solution ; the biological effect of the field is thus due to heat.

This research was carried out with the aid of a grant, for expenses, from the Medical Research Council.

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POLYCYSTIC DISEASE OF THE KIDNEYS

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THE case to be described has many unusual features.

History.—A. B., then 16 years old, was seen by her medical attendant in November, 1933. She complained of backache, lassitude, and dyspnœa on exertion. There was a considerable degree of anæmia. The urine contained large quantities of blood and pus, and bacteriologically *Bacillus coli* and *Staphylococcus albus*. There was no radiographic evidence of calculus, and the renal shadows were reported to be normal in size and shape, but after an injection of Uroselectan on Feb. 13th, 1934, none of the dye appeared in the renal areas at any time. She had appeared a healthy though under-developed girl until the onset of the symptoms. In October, 1933, she had had a very scanty menstrual period which lasted seven days, and was accompanied by a great deal of pain. This was the only period she had.

From November, 1933, to June, 1935, her condition fluctuated. The anæmia improved and for long periods the urine did not contain blood. She was able to take walks and carry on an apparently normal life.

Final illness.—On admission to hospital on June 23rd, 1935 at the age of 18, she was 4 ft. 7 in. in height and juvenile in appearance, with lack of development of secondary sexual characteristics. The blood pressure was 116/70 mm. Hg. The daily output of urine was 20–40 oz. until July 14th, the day before her death, when it was 2 oz. The specific gravity varied between 1004 and 1014, and the urine contained blood and pus. The blood-urea, ten days before death, was 700 mg. per 100 c.cm., the serum calcium 6·7 mg., and the creatinine 3·4 mg. There was a progressive anæmia, the hæmoglobin falling to 30 per cent., with red cells 2,400,000 per c.mm., colour-index 0·6, and the reticulocytes less than 0·1 per cent. The average diameter of the red cells was 7·3 μ. Total leucocytes were 16,000 per c.mm. with a differential count of polymorphs 78 per cent., monocytes 4 per cent., and lymphocytes 18 per cent. The polynuclear count was : (I.) 6, (II.) 20, (III.) 40, (IV.) 22, (V.) 12. Bleeding from the gums was noticed about that time and a pericardial rub two days before death. The disease was apyrexial throughout.

POST-MORTEM FINDINGS

There was a fibrinous pericarditis with 2 oz. of serous fluid in the pericardium. The heart weighed 8½ oz. The liver, spleen, and pancreas were normal. The uterus was small and the ovaries unscarred. The bladder and ureters were normal, the pelves dilated.

Kidneys.—Both kidneys were cystic. Each was 6 in. long, 3 in. wide, and 3 in. thick at the deepest part, and each weighed 15½ oz. The hilum notch was accentuated. The right kidney was translucent, the cysts being filled with a pale straw-coloured urine of specific gravity 1004, containing 0·5 per cent. of urea and a trace of albumin with a few pus cells. Many of the cysts of the left kidney were distended with blood-clot, some contained thick necrotic material and the remainder pale urine as in the right (Fig. 1). No tubercle bacilli were present and cultures gave *B. coli* and *Staph. albus*.

The *adrenals* were flattened and the normal contour lost. They were situated postero-internally immediately above the hilar notch, the external border becoming, with the altered position, anterior, the anterior surface postero-internal, and the posterior, antero-external. A considerable proportion of the kidneys was above their upper borders. They appeared, microscopically, normal.

Histology.—The small triangular areas at the junctions of the cysts presented the usual appearance of dilated ducts lined by cuboidal epithelium (Fig. 2). In the larger cysts this had become flattened. In the left kidney the renal tissue in these positions showed cloudy swelling of the tubular epithelium, tubules of unequal sizes, thickening of Bowman's capsule, and areas of round-celled infiltration (Fig. 3).

DISCUSSION

In addition to the abnormal situation of the adrenals, the unusual features of the case are :—

1. *Age.*—Oppenheimer [1] recording 59 cases of polycystic kidney gave the following ages when the condition was diagnosed :—

Years.	Patients.	Years.	Patients.
1– 9	0	40–49	17
10–19	0	50–59	18
20–29	2	60–69	8
30–39	14		

Küster's [2] figures for 239 cases were :—

	Patients.		Patients.
Stillborn or dying shortly after birth	59	30–40 years ..	24
Died in first year ..	10	40–50 ,, ..	53
1– 5 years	6	50–60 ,, ..	41
5–10 ,, ...	1	60–70 ,, ..	10
10–20 ,, ...	4	70–80 ,, ..	6
20–30 ,, ...	22	80–90 ,, ..	3

Oppenheimer collected from the literature 29 cases between the ages two and twenty years and suggests that these represent the connecting link between the new-born and the adult types of the same disease. Until we know more about the ætiology his contention

cannot be confirmed nor refuted, but his own and Küster's figures are remarkable in emphasising the rarity of the condition between the ages of one and twenty and the greatest incidence in the 30–60 age-group.

2. *Infantilism.*—The terms renal dwarfism, renal infantilism, and renal rickets have been used synonymously, but as Ellis and Evans [3] point out, many cases fall clearly into one of these groups and should be differentiated. The present case would be placed into the group of renal infantilism. The rarity, in fact total absence, of dwarfism, rickets, and infantilism recorded in connexion with polycystic kidneys in contrast with their frequency in cases of contracted kidney and hydronephrosis and dilatation of the ureters occurring before puberty may be explained by the fact that serious diminution in the amount of effective renal tissue in the former disease does not usually take place until after twenty years of age. Although it is difficult to believe on viewing cystic kidneys, the two-thirds of renal substance necessary to life (reduced now by some workers to one-sixth) must have functioned over the period of puberty.

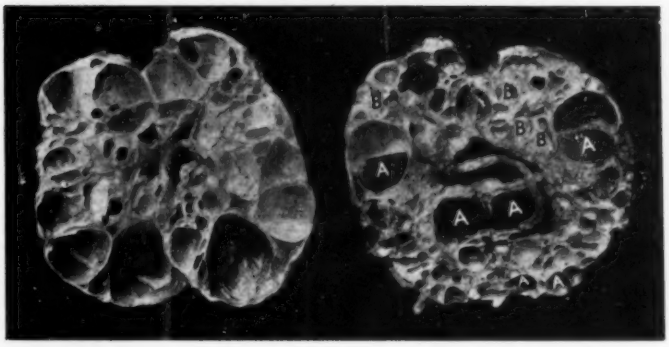

FIG. 1.—Photograph of the polycystic kidneys, sectioned, described in text. The right kidney was transparent, the cyst containing a pale yellow urine. The left shows some of the cysts filled with blood-clot at A, others filled with necrotic material at B. The cysts that appear empty in the photograph contained pale yellow urine. The ureters are seen in the centre of each kidney. (× ¼.)

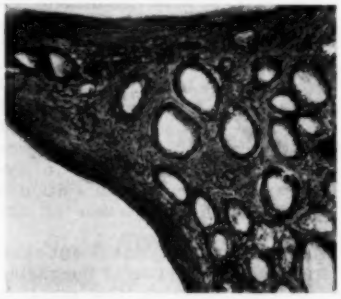

FIG. 2.—Photomicrograph of tissue between cysts, showing dilated tubules lined with cuboidal epithelium. The epithelium lining the larger cysts on each side of the triangular piece of tissue is flattened. (× 75.)

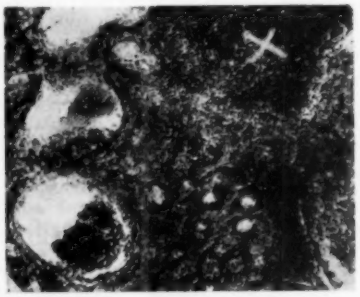

FIG. 3.—Photomicrograph of renal tissue from left kidney, showing thickened Bowman's capsule, variation in size of the tubules, and at × an area of round-celled infiltration. (× 75.)

Photomicrographs by C. F. Hill and W. E. Cooke.

3. *Blood analysis.*—The blood-urea, 700 mg. per 100 c.cm., was the highest I have seen. The serum calcium fell from 10·8 to 6·7 mg. a few days before death. The amount of creatinine was unusually high.

4. *Blood count.*—Brown and Roth [4] stressed the relationship between anæmia and renal insufficiency. They attribute the anæmia to a disturbance in hæmopoiesis. This is also suggested by the blood in the present case. Two factors may have been jointly responsible for the progressive anæmia—renal insufficiency and infection of the kidneys. But the polynuclear count points to some radical dysfunction either in the production or elimination, or alteration in the life-history of the polymorphs. The right-handed polynuclear count—(I.) 6, (II.) 20, (III.) 40, (IV.) 22, (V.) 12—giving a weighted mean of 3·14 is remarkable in itself in a case with a gross infection, still more so with a leucocytosis of 16,000 per c.mm., and is in my experience unique. The polymorphs generally were of normal size, but macropolycytes were not infrequently seen (Fig. 4). The lobes of the nuclei were so numerous and the fragments so contorted and superimposed as to make the count the most difficult I have encountered. Figs. 5, 6, and 7 were taken from almost successive fields in a blood film and will afford some idea of the task.

Similar counts are recorded in pernicious anæmia,[5] but in that disease the polymorphs tend to be larger

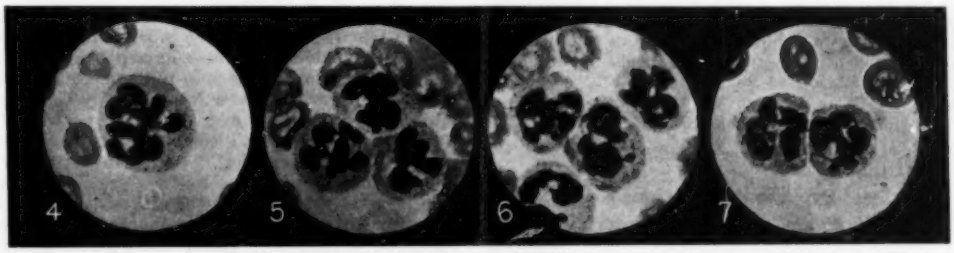

FIG. 4.—A macropolycyte of type 1 illustrating large size of cell and hypersegmentation of the nucleus. (× 1000.)
FIGS. 5 to 7.—Three almost successive fields in a blood film illustrating polymorphs with hypersegmented nuclei, and the difficulties encountered in making a polynuclear count. (× 1000.)

and the basichromatin in the nucleus less in amount and therefore less densely staining than in the present case, so that the contortions and divisions are more easily followed.

SUMMARY

(1) The case is one of polycystic kidney associated with infantilism. (2) Although gross infection of the renal cysts was present, the case was apyrexial throughout. (3) The blood-urea reached the high figure of 700 mg. per 100 c.cm. of blood. (4) The polynuclear count was right-handed. (5) The anatomical position of the adrenals was abnormal.

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MEDICAL SOCIETIES

ASSOCIATION OF CLINICAL PATHOLOGISTS

THE ninth annual meeting of this association was held, by the courtesy of Sir Henry Wellcome, at the Wellcome Physiological Research Laboratories, London, on Jan. 25th. Dr. J. G. GREENFIELD occupied the chair.

Dr. I. MUENDE (London) spoke on the

Clinical Pathology of Skin Diseases

with particular reference to parasitic and fungal infections. He pointed out that in acarus infection of human type the rash might be widespread and the manifestations varied but that the characteristic burrows would be found between the webs of the fingers, on the glans penis, in the axillary folds, and in women under the breasts. The parasite could be demonstrated by shaving off the skin at the end of the burrow and examining under the microscope. In infection derived from pet animals type burrows might be missing; the eruption was usually confined to the hands and arms and would disappear on removal of the infecting pet. In fungal infections the speaker laid stress on the identification of the type, which was best done by culture; in those acquired from cat, dog, or canary, removal of the source of infection was essential. Kerion was usually due to animal infection. The black dot type of ringworm was becoming much more common; in this type the extraction of hairs for examination presented difficulties which were best met by the use of a comedo extractor. Achorion infection might be acquired from mice, in which animals it produced a fatal encephalitis. Dr. Muende recorded one case which had been associated with an epidemic among mice in the place of work. Moniliasis was a not infrequent cause of paronychia; the fungus could be identified by scrapings taken from under the nail bed even in the absence of pus; it was particularly prone to occur in barmaids, bakers, and pastry cooks. Dyshidrosis was due to sensitisation to a fungus infection usually by an epidermophyton between the toes. A useful guide to the presence of such sensitisation was the reaction produced by the intradermal injection of the soluble products from a culture of mixed fungus of the same type. Eczema might be due to sensitisation to vast numbers of "eczematogens"; Dr. Muende described the "patch test" for the identification of such sensitisation.

Dr. C. M. WENYON, F.R.S. (London), spoke on the clinical pathology of

Protozoal Infections

He said that, though amœbic dysentery was probably not so common in this country now as in the years immediately succeeding the war, numerous carriers of pathogenic amœbæ still existed. Many of these carriers were not aware that they had ever had amœbic dysentery and many of them experienced very little inconvenience. Amœbæ might be found in vast numbers in the stools of those with very little in the way of symptoms and this had led some people to conclude that there were two types of histolytic amœba, one type (called "dispar") being of relatively low pathogenicity. Dr. Wenyon discussed the difficulties in the identification of amœbic infection and emphasised the necessity of examining fresh specimens of fæces; repeated examination might be necessary and protozoa were rarely found in very liquid fæces. Amœbæ might be found in scrapings taken from ulcers through a sigmoidoscope when they could not be found in the fæces. All intestinal parasites except giardia could be cultivated, but this method was only possible in institutions dealing with very large numbers of cases. Giardia was an inhabitant of the duodenum and could be obtained by means of duodenal intubation; cholecystitis had been ascribed to it but Dr. Wenyon did not regard the case as proven. In the diagnosis of protozoal blood infections a good stain was the first requisite. Except in the case of kala-azar culture was of no use as a diagnostic measure. In the diagnosis of bilharzia and schistosoma infestation a useful aid was the intradermal injection of the appropriate antigen.

Dr. G. W. GOODHART (London) pointed out that, while diagnosis of trichomonas infection of the vagina could be made from fresh secretion, the parasites could not be demonstrated in dried films.

Dr. R. V. FACEY (Bournemouth) stated that he came across large numbers of cases of vaginal trichomoniasis and that these responded readily to treatment with arsenical pessaries.

Dr. H. P. HIMSWORTH (London) spoke on the

Significance of Blood-sugar Levels in Diabetics

He asked why the blood-sugar rises in diabetes? The classical explanation is failure in carbohydrate storage. He however suggested that the rise of the blood-sugar was a compensatory phenomenon. He showed graphs indicating the course of the blood-sugar and of the ketosis in a severe case of diabetic coma; when sugar was given in large amount without insulin the blood-sugar rose but the ketosis became less; he cited an instance of diabetic coma in which the blood-sugar had been forced up by the administration of glucose to over 1000 mg. per cent. with decrease in ketosis and corresponding improvement in the clinical condition. On giving sugar to the diabetic more sugar was excreted than was taken; similarly the establishment of diuresis, though it had no effect on the blood-sugar level, would result in increased excretion of sugar. He suggested that the main factor in diabetes was an incapacity to utilise carbohydrate until the blood-sugar had risen to a

certain level above the normal; on this account it was harmful to withhold sugar from the diabetic. The level of the blood-sugar bore no relation to the clinical condition.

Dr. S. C. DYKE (Wolverhampton) expressed his agreement with Dr. Himsworth that more harm was done by withholding than by giving excess of sugar to the patient in diabetic coma, but pointed out that a high blood-sugar encouraged diuresis and therefore favoured the further dehydration of the patient; dehydration was the main danger in coma and reduction of the blood-sugar was a necessary step in combating it. In the established diabetic he asked whether continued hyperglycæmia might not be one of the causes of the vascular degeneration which is the main cause of morbidity.

Dr. J. A. BOYCOTT (London) described the

Diagnosis of Teratoma Testis

by means of the Aschheim-Zondek reaction. The method depended upon the fact that sufferers from malignant tumours of testis excrete in the urine excessive amounts of gonadotropic hormone; this was not the case with simple and inflammatory tumours. Two sets of mice were used; one series received graduated injections of concentrated and the other of unconcentrated urine. By means of a table it was possible to calculate the amount of gonadotropic hormone excreted. The test was useful not only in diagnosis but also in controlling the results of operation and radiotherapy.

Dr. DYKE also described a case of accidental transmission of malarial infection in the course of blood transfusion; the donor had lived in India but had never known that he had had malaria.

In the course of the afternoon Dr. S. H. Daukes, curator of the Wellcome Museum of Medical Science, conducted members round the magnificent medical museum of the institution.

GLASGOW OBSTETRICAL SOCIETY

AT a meeting of this society on Jan. 22nd Dr. JOHN GARDNER, the president, took the chair, and Dr. DUGALD BAIRD read the paper published on p. 295 under the title of

Maternal Mortality in Hospital

In the subsequent discussion Dr. J. DUNLOP said he did not accept the nasopharyngeal origin of puerperal sepsis, and attributed his own improved results in general practice to the use of gloves. He thought many errors in judgment resulted from overtiredness, after a long day in practice. He agreed that spacing of births was most desirable, and put in a plea for birth control clinics run by the local authority.

Dr. JAMES COOK thought that uterine inertia was often due to over-indulgence in strong tea. He was alarmed at the increased number of Cæsarean sections and asked why induction was not performed more often. He was in favour of a great extension of antenatal care, and advocated medical examination before marriage.

Dr. A. S. M. MACGREGOR (M.O.H. for Glasgow) was not convinced that there was an increase in the maternal mortality for Scotland, the apparent rise being due to more accurate certification and statistical fallacies. There seemed no doubt that technical practice was improving. He thought that an analysis such as Dr. Baird's, where each case was assessed individually, was the best method of studying the problem. The incidence of sepsis in Scotland had not diminished in the last few years, especially that of sepsis due to the hæmolytic streptococcus, and he believed that this might be explained by the increased virulence of the hæmolytic streptococcus in northern latitudes. He thought the non-coöperation of patients themselves was an important factor in maternal mortality. He asked if Dr. Baird would put greatest emphasis on the provision of antenatal beds in a government policy.

Dr. DOUGLAS MILLER advocated Cæsarean section in those cases of uterine inertia with stigmata of endocrine deficiency. He said they had been disappointed with the results of the use of masks in Edinburgh, and asked if some of the improvement in Glasgow was not due to more careful segregation of "suspect" cases.

Prof. SHAW DUNN remarked that antenatal care had not altered the incidence of albuminuria, since this condition probably depended on intimate physiological and dietetic causes, occurring early in pregnancy.

Prof. JAMES HENDRY thought that much of the improvement in results at the Royal Maternity Hospital was due to the reorganisation of the staff which allowed continuous service and team-work, and to better coöperation with the general practitioner and local authority. The extended use of Cæsarean section in the treatment of placenta prævia was a great advance.

Dr. BAIRD replied that he did not attribute the fall in the sepsis-rate to better segregation. The most striking fall occurred in sepsis following spontaneous delivery, which, as Colebrook had shown, was almost always due to the hæmolytic streptococcus, in contrast to sepsis following abnormal labour, where the hæmolytic streptococcus was the causal organism in only 30 per cent. There was little evidence of infection being transferred from one patient to the other, for the cases of sepsis were sporadic and infection seemed to take place at the time of labour. He was convinced of the nasopharyngeal source of infection by the hæmolytic streptococcus. He certainly thought that more antenatal beds should be an important feature of a government plan; but great tact was often necessary to persuade the patient to stay in hospital.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

AT the annual meeting of this society, held in Manchester on Jan. 24th, with Dr. RUTH NICHOLSON, the president, in the chair, a paper on

Extroversion of the Ovaries for Secondary Functional Amenorrhœa

was read by Dr. K. V. BAILEY. Recent advances in endocrine therapy, he said, had done much to simplify the treatment of many uterine disorders, and Kaufmann's work had undoubtedly established a rational treatment for functional amenorrhœa. But even the large doses of hormones used by Kaufmann gave irregular results and Dr. Bailey thought it desirable to bring forward an operative treatment he had adopted in 16 cases during the past five years, especially as its results indicated a probable cause for the relative failure of endocrine therapy in some cases of secondary amenorrhœa. In this condition uterine junction had once been present, and the true failure was probably in ovary or

pituitary. As a rule, the patient was otherwise healthy and well developed, showing no sign of gross endocrine imbalance. In the ovaries themselves lack of follicular ripening and ovulation might lead to multicystic disease or to chronic cirrhosis of the tunica with progressive fibrosis of the ovarian stroma—findings most readily attributable to a basic pituitary deficiency. Once established, these changes were permanent; although ovulation might occasionally be induced in an ovary showing advanced multicystic disease, it could only occur in a small area which still functioned and found an outlet to the surface. Regeneration was as impossible as in a multicystic kidney. The operation he had adopted was based on these facts and sought to assist maturation and ovulation in the remaining follicles by facilitating their approach to the surface. It might seem to break the rules of surgery, because a raw surface was deliberately produced in the pelvic cavity, but this raw surface faced downwards towards the pouch of Douglas and was not in contact with any peritoneal surface. What he did was to excise a wedge of tissue sagittally from the cystic or cirrhotic ovary, with its apex at the hilum; then by means of sutures the organ was turned almost inside out—or, more accurately, the cut halves were flattened outwards. In no case had Dr. Bailey seen post-operative adhesions or symptoms attributable to them, and he now looked on the operation—which he usually preceded by dilatation and curettage—as thoroughly safe. Endocrine treatment had been given in addition, including Antuitrin S, but judging by control cases the doses were too small to have any effect per se, though they might stimulate follicular growth, to the stage of ovulation, in the extroverted ovary. Of the 16 cases treated, the duration of the amenorrhœa had been over six months in 4, over a year in 4, and over two years in 3; there were also 5 cases with a constant periodicity of two to six months. Regular menstruation had been established and continued in 12 of the 16 cases, the operations being performed in 1932 (1 case), 1933 (1), 1934 (4), and 1935 (6). Of the 4 other patients, 1 had begun to menstruate three years after operation, 2 had had single periods, and 1 had not yet menstruated at all; in these 4 cases the initial amenorrhœa had lasted, respectively, one year, seven months, six months, and two years. In 2 of the successful cases other treatment (including curettage and administration of antuitrin S or œstrin or both) had been given for three months before operation without effect. On one occasion, Dr. Bailey said, he had seen at laparotomy an ovary which had been resected and repaired a few months previously. Surface healing had taken place by the formation of a thin red and wide scar—much more delicate at that stage than the tunica albuginea itself—and it was probable that a similar scar formed on the cut surface of the extroverted ovary, which would easily allow of ovulation. Though adequate hormone therapy should always be attempted where possible, and might be successful where amenorrhœa had not been too prolonged, he believed that the operation described might be helpful in cases which proved otherwise resistant.

Mr. J. E. STACEY said that the late Mr. King had performed a similar operation on a number of cases of dysmenorrhœa in the presence of cystic ovaries. He was inclined to think it would be more useful for that condition than for secondary amenorrhœa.—Prof. D. DOUGAL thought the operation very drastic if the patient was young and if the amenorrhœa was only of six months' standing. Periods of amenorrhœa of this length were by no means uncommon in young unmarried women.—Mr. T. N. A. JEFFCOATE said there were really three types of amenorrhœa: (1) where the ovary was not functioning as an endocrine organ; (2) where there was persistence of the œstrin phase; and (3) where there was persistence of the lutein phase. A differential diagnosis could be obtained by the examination of curettings, and the condition might be relieved in a number of ways—e.g., by injections of anterior pituitary hormone, by mental shock, or perhaps as a result of the shock of an operation.—Dr. D. C. RACKER considered that a persistently low blood œstrin was sometimes a factor in the production of amenorrhœa of this type.—DR. BAILEY, in reply, agreed that operative treatment was certainly drastic but felt that it had a definite place where other methods had failed.

Granulosa-cell Tumour

Prof. DOUGAL said that during the last ten years there had been a revival of interest in certain ovarian tumours which had a hormonic influence on the sexual characters of the host. These tumours were derived from undifferentiated cells in the ovarian mesenchyme which though not utilised during embryonic development still retained their powers of growth and later in life were able to proliferate and form new growths. If the sexual influence of these cells was towards masculinity the tumour was known as an arrhenoblastoma; if towards femininity, as a granulosa-cell tumour; and if neutral, as a dysgerminoma. He described the case of a married woman of 41 who complained of excessive and too frequent menstrual loss, and who had a large solid abdominal tumour indistinguishable clinically from a uterine fibroid. At operation the tumour was found to be ovarian and was removed, the uterus and the other ovary being left behind. Microscopically it proved to be a very large granulosa-cell tumour composed of large numbers of alveoli containing round cells with deeply stained nuclei. Commenting on this case Prof. Dougal pointed out that granulosa-cell tumours are usually unilateral and have a very low degree of malignancy, if they are not actually benign. They may develop at any period of life and their biological influence is due to excessive secretion of œstrin. Therefore, if the tumours develop before puberty sexual precocity is the result; if during the reproductive period, excessive and too frequent menstrual loss; and if after the menopause, post-menopausal hæmorrhage.

The discussion which followed centred round the distinction between the granulosa-cell tumour and the Brenner tumour, which is derived from Wolffian relics in the hilum of the ovary. Mr. JEFFCOATE held that their distinction on histological grounds must be very fine and that a physiological basis would be more satisfactory—i.e., if a tumour produced œstrin, and consequently a disturbance of the menstrual cycle, it was a granulosa-cell tumour, while if it did not it must be a Brenner tumour.—Prof. DOUGAL said he was inclined to agree.

Dr. J. W. BRIDE described three cases of hydroperitoneum secondary to ovarian tumours, and showed a specimen of malignant Fallopian tubes.

Corrigendum.—Mr. A. W. Cubitt points out that the remarks attributed to him on p. 260 of our last issue were made by a subsequent speaker.

REVIEWS AND NOTICES OF BOOKS

Outlines of General Psychopathology

By WM. MALAMUD, M.D., Professor of Psychiatry, State University of Iowa. London: Chapman and Hall. 1935. Pp. 462. 21*s*.

A SYSTEMATIC account of psychopathology, such as is here supplied, is greatly needed by the beginner in psychiatry. Presentations of the theory of this or that school abound, but for an ordered arrangement of the known data and the less debatable explanations for their occurrence the reader has had to turn to the translation of Kretschmer's text-book of medical psychology, itself disproportionate in so far as it reflects the personal investigations and interests of its author. Prof. Malamud's book is well balanced and non-controversial. Through having worked in Heidelberg he is familiar not only with the holistic method of von Weizsäcker's earlier phase but also with the phenomenology of Jaspers, to whose more detailed and formal treatise he is clearly indebted. Chief, however, among those whom he mentions as his guides, one sees Adolph Meyer whose salutary refusal to guess overmuch is a sure guard against the common faults of psychopathologists.

The book begins with a plain definition of psychopathology and discussion of its relationships and limitations, the fields in which it may be applied and the material upon which it draws. The next part describes and analyses the phenomena under the general heads: behaviour and experience. The various determinants in pathogenesis are next examined in turn, the structure of personality is discussed, and the synthesis of abnormal functions in the various types of morbid reaction is illustrated, in the last part of the book, by clinical material. In spite of its length the work is properly named: it is only a framework or outline, in which the experienced psychiatrist must not expect to find recondite problems or much detail. The difficulties of the author's task have been so well overcome that it would be unjust to reproach him for omissions that are judicious and doubtless intentional.

Immunology

By NOBLE PIERCE SHERWOOD, Ph.D., M.D., Professor of Bacteriology, University of Kansas, and Pathologist to the Lawrence Memorial Hospital, Lawrence, Kansas. London: Henry Kimpton. 1935. Pp. 608. 25*s*.

THIS is a laboriously and conscientiously produced volume which covers the main ground of immunological science. Such subjects as cellular immunity, serological tests, blood grouping, the chemistry of antigens, and hypersensitiveness are treated in detail and the analysis of a large body of immunological literature is made available. At times the "scissors and paste" method of compilation is unduly obtrusive, but some chapters, notably those on hypersensitiveness, are well done and the author clearly speaks from his own experience. Among the less satisfactory chapters are those on toxin and antitoxin. Here Prof. Sherwood seems to tread with a somewhat uncertain step, though the subject is a fundamental one in immunology. We were unable for example to find any clear description of the present unit of diphtheria antitoxin: the accounts given on pages 116 and 212 are inadequate not to say misleading. The sections on active immunisation against diphtheria also seem to have been compiled somewhat uncritically. It is surprising to find the expressions "*C. diphtheria*" and "*Cl. botulinus*" repeated in several places in an otherwise carefully written book. To the instructed reader the book will prove of considerable value as it covers in well-expressed summaries a large amount of modern immunological literature, particularly that of American origin, and provides full references to original sources.

The Foot

By NORMAN C. LAKE, M.D., M.S., D.Sc. Lond., F.R.C.S. Eng., Senior Surgeon and Lecturer on Surgery, Charing Cross Hospital. London: Baillière, Tindall and Cox. 1935. Pp. 330. 12*s*. 6*d*.

DISORDERS of the feet, which are extremely common, have been treated lightly by the medical profession until recent years, to the profit and satisfaction of unorthodox practitioners and the vendors of patent remedies. Painful feet, to which doctors and nurses are especially prone, are liable to alter the whole outlook of the individual and make work a burden. It behoves us therefore to study their causation and treatment with minute care. This book is intended for the practitioner and general surgeon, perhaps for the masseur and chiropodist, and does not deal with elaborate orthopædic details, which can be studied elsewhere. Enough about the evolution, anatomy, and physiology of the foot is presented in readable form to make a foundation for the later chapters dealing with the ætiology and treatment of its common disorders. One chapter is devoted to footwear, and one to the mechanism of walking, in relation to the weakness of the modern foot. Needless to say, woman's footwear receives just criticism. The commoner operations recommended are briefly described in a separate chapter, and methods of anæsthesia are discussed. The old anatomical terminology is used throughout (except for one or two mistakes), but it would be to the advantage of future generations of students if the terminology of the Anatomical Society of Great Britain, now used in two or three text-books, could be adopted in future editions. It is difficult to understand why anatomists and surgeons should speak different languages. There are some printer's errors which should also receive attention in a future edition.

The book can be strongly recommended as an excellent exposition of disorders of the feet.

Experimental Physiology

By M. B. VISSCHER, Ph.D., M.D., Professor of Physiology in the University of Illinois, Chicago; and P. W. SMITH, Ph.D., Associate in Physiology in the University. London: Henry Kimpton. 1935. Pp. 191. 15*s*.

LIKE most practical physiology text-books this is based on a course of experiments made by the students of a particular medical school. Such courses have much in common, and the authors here are careful to make no claim for originality in their subject matter presented. In this they are modest, for we have not seen in other books simple instructions for the demonstration of experimental polyneuritis in the pigeon, or for the observation of the œstrous cycle and the gonadotropic (wrongly called œstrogenic) properties of pregnancy urine. Experiments are suggested for every "system" of the body, and the

frog muscle experiments are cut down to suitable proportions. The only criticism with regard to allocation of space is that the nervous system and the special senses are perhaps over-represented. The instructions are clear and concise, and no teacher will read through the book without picking up useful technical hints. An unusual feature is that the illustrations are nearly all photographs, a road to perfection which most authors have abandoned as being too full of pitfalls. In this case the experiment is justified, the lay-out of the apparatus and the photography being excellent. The last chapter is an appendix on methods, preparations, apparatus, dosage of drugs in animal experiments, and so forth, and is of real value. Selected references to original papers and reviews are given throughout.

The general impression left by the book is that of a well turned-out and practised piece of work with no loose ends, and the publishers as well as the authors deserve praise for its production.

NEW INVENTIONS

INSTRUMENTS FOR USE IN OPERATIONS UPON FRACTURES OF THE NECK OF THE FEMUR

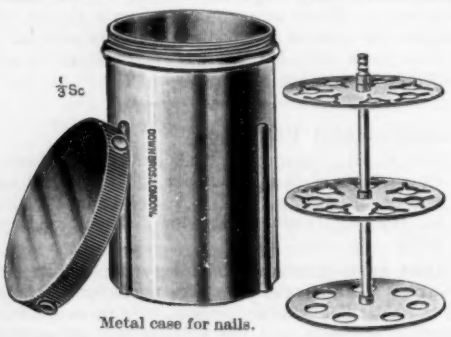
THE following instruments have been designed for use in operating upon fractures of the neck of the femur by the lateral approach.

LLOYD-KING NAILS

(Modified from Smith-Petersen)

These stainless steel nails are a modification of the Smith-Petersen triradiate nail and are designed for

use with Eric Lloyd's director, though they are equally suitable for any other method of operating upon fractured necks of the femur. The nails differ from the standard design in the following particulars: 1. The head is twice the usual thickness, being 1 cm. deep, and is traversed by a threaded hole 6 mm. in diameter. 2. The nails are made in seven lengths from 7 cm. to 10 cm. with an interval of 0·5 cm. between each consecutive pair. 3. The length of each nail (excluding the head) is engraved on the head and no engraving is permitted on any other part of the nail. 4. Each of the three flanges is snagged like the edge of a saw for 3 cm. adjacent to the head. This is intended to counteract any tendency for the nail to come out when it has once been inserted. 5. One of the three flanges is made 3 mm. shorter than the others. This shorter flange



Metal case for nails.

is directed proximally when used with Eric Lloyd's director. 6. The nails are made in two diameters—viz., the ordinary standard 13 mm. and a larger one of 16 mm.

STERILISABLE METAL CASE FOR LLOYD-KING NAILS

This is a strongly made metal cylindrical case with a screw-top lid. It contains a cruet stand fitting, which is made to take one set of seven Lloyd-King nails of 13 or 16 mm. diameter. The case is half filled with water and the lid screwed down half a turn before boiling the nails. Thereafter, no handling is necessary, and as the length of each nail (excluding the head) is engraved on the outside of the head it is easy to find the desired length of nail. Moreover, the absence of any one of the seven sizes of nail is immediately noticed if they are kept in this case.

LLOYD-KING NAIL INTRODUCER

This is a threaded stainless steel rod which screws into the head of the nail. It is used to pick out the selected nail from the sterilised case containing the set of seven and to start the nail the first few millimetres into the cortex of the great trochanter. All temptation to handle the nail is thus removed, and

the short flange of the nail can be placed in the correct orientation during introduction. As soon as the nail has started on its course the introducer can be unscrewed and an ordinary punch used to complete the nailing.

LLOYD-KING NAIL EXTRACTOR

The removal of triradiate nails may be extremely difficult and some patterns of extractors necessitate full exposure of the whole head of the nail and even a portion of the shaft before the instruments can be engaged. This extractor screws into the head of the nail and considerably simplifies removal, inasmuch as exposure is minimised. It was described by Thomas King, and is here modified in three respects: 1. The engaging screw is much longer and of larger

diameter. 2. A single extractor will remove nails of either 13 or 16 mm. diameter. 3. A larger and more convenient screw handle has been supplied.

These instruments have all been made for me by Messrs. Down Bros., Ltd., St. Thomas's-street, London, S.E., but the director (described in THE LANCET, 1935, ii., 129) is made by the Medical Supply Association.

ERIC I. LLOYD, M.B. Camb., F.R.C.S. Eng.

THE LANCET

LONDON: SATURDAY, FEBRUARY 8, 1936

SAFETY *versus* COMFORT IN CHILDBIRTH

THE large majority of confinements are now attended by a midwife and it can hardly be long before every expectant mother will require the attendance of a woman whose experience and responsibilities are legally defined. In 40–50 per cent. of the cases she attends the midwife calls in a doctor, and in a proportion of confinements which varies from 10–70 per cent. in different parts of England a doctor has been previously retained by the expectant mother; but this leaves many women who cannot expect any alleviation of the pains of childbirth except what they can get at the hands of a midwife. Fifteen years ago the Home Secretary gave every midwife who has notified her intention to practise the right to carry in her bag Dover's powder and laudanum as well as chloral and bromide; with these the midwife working alone has been able to ensure rest and relaxation for the anxious and restless patient. The injunction of the Central Midwives Board that no drug should be used by a midwife unless she has been thoroughly trained in its use and is familiar with its administration seems to have been conscientiously followed. But none of these sedatives is effective in the second stage of labour, and four years ago Miss E. M. PYE suggested and Mr. L. C. RIVETT worked out the use of chloroform in the form of 20-minim capsules, to be crushed and administered by the midwife, or by the woman to herself, during brief periods of severe pain as they arise. Under the leadership of Mrs. STANLEY BALDWIN the proposal was taken up warmly by the National Birthday Trust Fund, which was then financing the provision of qualified anæsthetists in maternity wards, and at a festival dinner of the British College of Obstetricians and Gynæcologists Mr. BALDWIN said he wanted to see the day come when the best form of anæsthesia should be within the reach of every parturient woman. In reply, Dr. J. S. FAIRBAIRN, speaking as president of both Board and College, pleaded that he was ground between upper and lower millstones—between those who would trust the midwife with any available anæsthetic, and those who hesitated to place dangerous weapons in the hands of women not qualified to use them. What, he said, was needed was a scientific clinical test on a large scale, for the method adopted must be without increased risk for mother or child. This is in brief the origin of the investigation into the use of analgesics in midwifery, the report of which appeared last week and was summarised in our columns (pp. 282–3). The subcommittee of the College entrusted with the investigation consisted at first of Dr. FAIRBAIRN, Mr. EARDLEY HOLLAND, Prof. FLETCHER SHAW, Mr. RIVETT, and Mr. CHRISTIE BROWN. Later Mr. G. F. GIBBERD was coöpted to assist in drawing up the forms of record, Dr. Z. MENNELL to advise about the analgesics employed, Prof. E. MELLANBY as nominee of the Medical Research Council, and Dr. MATTHEW YOUNG for expert statistical help. The investigation was a wide one; 36 hospitals in various parts of the British Isles took part in it, and they were kept in touch by supervisors prepared to clear up doubts as to the purpose of the investigation and to give instruction in the use of the standard methods. Although the special reference was to the use of chloroform capsules by midwives the investigation was widened to cover the efficacy and safety, in the hands of various groups of administrators, of nitrous oxide, of paraldehyde, and of chloroform given in three different ways.

On all these methods of producing analgesia the committee have come to definite conclusions, on which equally definite recommendations are based. The ground can at once be cleared of paraldehyde per rectum because "it does not provide adequate analgesia at the time of the actual birth." Gas and air administered by the Minnitt apparatus "is a safe and satisfactory method of producing analgesia, although the apparatus is expensive and the nitrous oxide costly"; its use should be "extended to the practice of midwives, provided they are specially trained in its administration." Chloroform, on the other hand, given by any method, "should not be used by midwives acting alone. This conclusion," the report says, "has been reached with regret, but both immediate and delayed dangers, which are well recognised, occurred in this investigation, and it is not possible fully to guard against such occurrences if the administration of chloroform is in inexperienced hands. This finding should not, however, be taken as prejudicing the use of chloroform by registered medical practitioners, who, aware of the dangers, can take precautions to lessen the risks." These recommendations it will be noted bear on the question of safety rather than on that of efficacy, for, to repeat Dr. FAIRBAIRN'S words, the method adopted must be without increased risk for mother or child; but it is interesting to note the high degree of efficacy both in gas-and-air and chloroform analgesia, no matter what the method or agent of administration. The proportion of patients who obtained satisfying relief from pain varied from 79 up to 94 per cent.; it was 84 per cent. for chloroform capsules administered by the midwife (in 695 reported cases). This method which was the primary object of the investigation is therefore well justified by the relief afforded, and it is natural to inquire more closely into the reason for the conclusion that it should not be used by midwives acting alone.

Among a total of 4975 cases in which chloroform was given by various methods to produce analgesia, with or without general anæsthesia, 6 mothers died; and these deaths were studied in detail. In 3 of the 6 the conclusion is reached that chloroform was in no way responsible for death;

in 2 it was an important factor in the fatal issue; and in 1 chloroform was directly responsible for death. This last case was the only one in which chloroform was given in the form of capsules. The patient was a primigravida, 21 years of age, with well compensated mitral disease, who had received a standard dose of paraldehyde and late in the second stage was given chloroform capsules by a medical student. When the head was about to be born the woman became difficult to control and six capsules were used within two minutes. This death, says the report, illustrates that chloroform capsules are not foolproof and shows that the display of precise instructions as to dosage is not a sufficient safeguard against misuse, even in hospital. It will be noted however that the report contains no evidence of harm being done by chloroform capsules to any woman in normal health, nor of any harm being done by chloroform capsules given by a midwife, or even by a pupil midwife. On the other side we have a statement to the Birthday Fund in 1933 that among 4000 patients who had capsules at Queen Charlotte's and Middlesex Hospitals there was no maternal death, while out of every 100 women 90 obtained some, and 50 very great, relief. Commenting on these figures Mr. RIVETT declared that "this is a completely safe and foolproof method of relieving the intense pains of childbirth and one which is easily learned at a very short course of instruction"; and if the committee have obtained evidence which reverses this verdict, they have not produced it. It was already common knowledge that some patients given chloroform capsules are noisy and difficult to control during the second stage, but so far as we are aware this has never led a midwife to disobey instructions and crush capsules so freely as to produce an over-concentration of chloroform vapour. In the other two fatal cases in which chloroform was blamed it had been given for prolonged periods by the Mennell inhaler and was later pushed to full surgical anæsthesia, the illness being typical of the diffuse acute necrosis of the liver which occasionally follows the administration of chloroform. For example, in his analysis of 999 fatal cases in a Glasgow maternity hospital (see p. 295 of this issue) Dr. DUGALD BAIRD finds that delayed chloroform poisoning was the sole cause of death in 5 forceps deliveries after long labour. The report admits that it was the full surgical anæsthesia rather than the preliminary analgesia which was the important factor in the cause of death, but regards the previous prolonged analgesia as weighting the balance against recovery. Whatever lesson is to be drawn from these cases against the use of deep chloroform anæsthesia in obstetric operations when so safe an anæsthetic as nitrous oxide is available, they seem again to have little if any bearing on the safety of a limited number of chloroform capsules, spaced at intervals of not less than five minutes, in the hands of a midwife acting alone.

But while the report is clear that chloroform by any method should not be used by midwives acting alone, it recognises that the administration of gas and air is a safe and satisfactory means of producing analgesia, and recommends its extension to the practice of midwives under proper controls. Unfortunately, as we have seen, the committee find themselves obliged to lay stress on the expense of the apparatus and the costliness of the nitrous oxide. The expense of the apparatus is not arguable, but the cost of the gas in the investigation was enhanced by wastage "owing" it is said, "to the fact that, as the apparatus is now constructed, leakage may occur at many places unless constant attention is given to minor adjustments." It seems that in the investigation itself the leakage in question assumed such proportions as to invalidate any estimate of the cost of gas-and-air administration per patient; but we should like to call attention to the experience of Dr. J. ELAM, as set out in our own columns a few weeks ago (THE LANCET, 1935, ii., 1253), in which particular attention was paid to the competence of the midwife to administer gas-and-air analgesia and to the cost of the case itself. At the Wellhouse Hospital, Barnet, midwives have been trained to use gas and air for their own patients, the only trouble met with in district work being to decide when to start the administration, a difficulty which was soon overcome in practice. Dr. ELAM was satisfied that the cost of nitrous oxide per case at Barnet was working out at about two shillings.

A NEW INSULIN COMPOUND

IN treating endocrine deficiencies with glandular extracts it is not always easy to imitate the steady controlled secretion of the normal gland. Where the injected or ingested extract is stored in the body and used as required, as happens in thyroid therapy, no difficulty is experienced. But more often the available extracts have only transient effects, and when in addition the preparation must be given hypodermically serious obstacles may arise; for a point is reached at which the patient will revolt against a life punctuated by too frequent pin-pricks and will prefer his deficiency as the lesser evil.

The treatment of diabetes mellitus with insulin is a case in point. The average diabetic needs two daily injections of insulin and a considerable number require three; but few patients would tolerate more. Since the action of insulin is limited to a few hours the humane physician is usually forced to give larger doses of insulin than the immediate level of the blood-sugar would indicate. His patient accordingly oscillates between glycosuria with its attendant threat of ketosis, and the less dangerous but decidedly unpleasant state of hypoglycæmia. More than one attempt has been made in the past to avoid this difficulty by delaying the absorption of injected insulin. Some years ago LEYTON [1] tried powdered insulin suspended in castor oil and showed that the latter hindered the absorption of insulin and smoothed out the grosser oscillations of the blood-sugar. But the oily vehicle is only very slowly dispersed (by phagocytosis) and the risk

[1] Leyton, O.: THE LANCET, 1929, i., 361 and 756.

of local infection is increased. Recently Prof. HAGEDORN and his associates in Copenhagen have attempted to solve the problem by combining insulin with various organic bases to form compounds which are relatively insoluble at the pH of tissue fluids and are accordingly more slowly absorbed. HAGEDORN has just published some of his preliminary results [2] and ROOT and others [3] have reported their experiences with samples of the same preparation, supplied by Prof. HAGEDORN. The preparation in question, protamine insulinate, is made by mixing a solution of insulin hydrochloride with a protamine extracted from the sperm of a species of trout, *Salmo irideus*. The insulin combines with the protamine base to form a compound which is least soluble at pH 7·3, that is, about the reaction of normal plasma. When this mixture is injected into a normal subject evidence of considerable delay in absorption is observed. Compared with ordinary insulin the fall in blood-sugar is much more gradual, and although the degree of hypoglycæmia obtained is rather less, the effect persists for about twice the usual time. Exactly similar differences are observed in diabetic subjects. Here the effect is greatest in those patients who are rather sensitive to insulin and whose blood-sugar under orthodox treatment displays big oscillations. Protamine insulinate smooths out the peaks and depressions to a remarkable extent, and the excretion of sugar and also of ammonia (an index of acidosis) is greatly reduced.

The charts shown by both the Danish and the American workers leave no doubt in the mind of the reader that combination with protamine greatly delays the action of insulin. This is an important advance, but we cannot yet assess its practical significance. A number of incidental problems must first be studied. For instance, the blood-sugar of the diabetic usually reaches its highest level in the period preceding the first meal of the day. The morning dose of insulin has therefore not only to reduce this level, but also to balance the carbohydrate eaten at breakfast. It has been found that protamine insulinate is not absorbed quickly enough to serve this double purpose, and it has been found advisable to use ordinary insulin for the morning dose, reserving the protamine compound for the evening, where a prolonged rather than an intense effect is desirable. That, of course, means that the patient would have to carry two kinds of insulin, and his daily routine is already complicated enough. Moreover the present preparation does not remain stable indefinitely and the suspension must be shaken before the syringe is filled. Finally, the new compound seems to be contra-indicated in diabetic coma where rapidity of absorption is vital. None of these difficulties is necessarily insuperable and the further researches of Prof. HAGEDORN and his colleagues will be awaited with keen interest. Meanwhile it is necessary to point out that the work is still in the experimental stage.

[2] Hagedorn, H. C., Jensen, B. N., and Krarup, N. B.: Jour. Amer. Med. Assoc., Jan. 18th, 1936, p. 177.
[3] Root, H. F., White, P., and Marble, A.: Ibid., p. 180.

PROSTATIC INVOLUTION

HOWEVER much we may pride ourselves on the advances made in prostatic surgery during the last ten years prostatectomy remains a formidable operation, and it is worthy of note that medical men who have recommended the operation to their patients sometimes show a disinclination to undergo it themselves when they begin to find micturition difficult. Any treatment that holds out a hope of saving an elderly man from the dangers and discomforts of a major surgical operation deserves consideration. Dr. PAUL NIEHANS, in an article which appears on p. 307 of this issue, claims to have given relief to nearly 400 sufferers from prostatic enlargement by the simple operation known as Steinach's ligature II. In his opinion senile changes in the prostate are due to the removal of the inhibiting action of the hormone secreted by the seminiferous tubules and the unrestrained action on the prostatic tissues of the secretions of the interstitial cells of Leydig and of the basophil cells of the anterior pituitary, together with the female hormone which is known to exist in men as well as in women. This endocrine view of prostatic enlargement was anticipated many years ago by Mr. KENNETH WALKER in a Hunterian lecture which was published in our columns.[1] Mr. WALKER then stated that, although it was not known what determines the onset of prostatic enlargement, the enlargement was undoubtedly an incident in the involution of the genital tract. In all probability, he added, it was brought about by an upset in the endocrine balance occurring at the time of the male climacteric. Since that time great advances have been made in our knowledge of the hormones regulating sexual activity and of their interaction with the secretions of the pituitary body; and it is now established that the pituitary plays a very important part in the changes occurring in the endocrine system at the time of genital involution. Dr. NIEHANS summarises recent work on this subject, and whatever may be the value of the method of treatment he advocates we may well admit that senile changes in the prostate will ultimately be explained in terms of endocrinology.

After reviewing former attempts to deal with enlargement by such means as castration and vasoligature, Dr. NIEHANS relates how in 1928 he made use of the method of ligaturing the efferent ducts of the testis that had previously been employed by STEINACH as a means of "rejuvenation." He postulates that by occluding these ducts the hormones of the germinal epithelium are forced through the pores of the tunica albuginea into the numerous veins surrounding the testicle, and thence pass into the general circulation. Since these hormones inhibit the action of the various secretions reponsible for senile changes in the prostate, any increase of them in the blood stream would have a curative effect. On p. 242 of our last issue is recorded the demonstration for the first time in

[1] THE LANCET, 1924, i., 16.

monkeys that male hormone can cause the disappearance of prostatic hypertrophy induced by œstrone. This would well account for the results following the ligature, when not only symptoms improved, but the size of the prostate diminished, and in the majority of cases residual urine disappeared. But what Dr. NIEHANS does not explain is why ligature of the efferent tubules should prove so much more effective than ligature of the vas. By either method the same result should be obtained—namely, cutting off the external secretion of the testis and increased absorption into the general blood stream. Yet vaso-ligature as a method of treating prostatic enlargement has proved a complete failure. Nor does he make it clear how ligature can revive the activity of the epithelium of the tubules. If the changes in the prostate are the result of involution in the seminiferous tubules, can it be supposed that occlusion of the efferent ducts stimulates their activity in addition to promoting absorption of their secretion?

Medicine however is not an exact science and the proof of the validity of Dr. NIEHANS'S observations should be sought in results rather than in deductions. Does ligature of the efferent ducts in fact relieve the patient of his symptoms, lead to a shrinkage of the prostate and the disappearance of the residual urine? In assessing the value of any method of treating prostatic obstruction it must be borne in mind that the symptoms of which the sufferer complains are liable to fluctuate. Periods of increased frequency and difficulty are followed by intervals of improvement, and care must be taken not to mistake one of these quiescent periods for an improvement that is the direct result of treatment. Moreover it is now certain that much of the difficulty in micturition experienced by a prostatic patient is the result of a dynamic rather than a static factor, that is to say, spasm of the sphincter rather than mechanical obstruction. Those who believe that Steinach's ligature II. acts through the sympathetic system, rather than by means of an alteration in the endocrine balance, may be right. But however disinclined urologists may be to believe that so simple a proceeding as that advocated by Dr. NIEHANS can cure prostatic obstruction, the mere fact that it is simple and can do no harm demands that it should be tried. If one man has been able to obtain such excellent results, others should have no difficulty in confirming them. The value of Steinach's ligature II. can readily be proved or disproved.

EPIDEMICS OF MALARIA

IN a paper read before the Royal Society of Tropical Medicine and Hygiene on Jan. 16th and expressly confined to the epidemiological side of malaria, Lieut.-Colonel C. A. GILL dealt primarily with the epidemic which began in Ceylon in the autumn of 1934. In any particular part of the area which this finally covered it broke out with such startling suddenness that its onset could be fixed to a day, the date being a month later in the southern than the northern part. Thus in the town of Kurunegala, selected for intensive study for its convenient situation, the dispensary attendances were respectively 106 and 306 on Oct. 28th and 29th. This first wave had four morbidity but only three mortality peaks, set at about monthly intervals, the first morbidity peak bringing no corresponding rise in the death-rate. Further, as to children under 4, whose susceptibility to malaria is well known, there was an actual lowering of the percentage attending dispensary during the first wave and this was followed by no increase in deaths. These facts led GILL to the conclusion that the first morbidity peak was caused by relapses among older persons—a view strengthened by the reasoning that, had it been due to fresh infections, there must first have been a great increase in the numbers of infective *Anopheles culicifacies*, that such increase in infective numbers must have taken place from a human population still in its normal state of health, and that when infective the mosquitoes must have abstained from children's blood. There is no mention of any influx of persons not immune to the local plasmodial strains, so that GILL was left with a combination of two factors as the cause of the epidemic, the first being some influence on the plasmodium or its host making for relapse, the second the appearance of conditions favourable to multiplication of the mosquito carrier. As to the latter, he notes that there was a sharp rise in atmospheric humidity in October, 23 days before the onset of the first four-peaked epidemic wave, and another in April which in turn was followed by another epidemic wave. He also points out that during the nineteenth century malaria epidemics took place simultaneously in different parts of the world, that they were related to the cycle of sunspots, and that these last produce widespread abnormality of meteorological conditions. He showed a curve based on the seven and a half sunspot cycles which fell between 1860 and 1934, the most striking feature of which was the association of malaria pandemics with maximum or minimum sunspot numbers. These conditions of the sun are apt to be associated with drought or floods, and GILL pointed out that drought in a normally wet zone and flooding in a normally dry zone are likely to bring about conditions favourable to excessive breeding of mosquitoes. It was not however noted at the meeting that there may well be a nearer relationship between a changing quality of light and the occurrence of malaria relapse; EUGENE R. WHITMORE[1] has, for instance, shown that violet light produces relapse in the malaria of canaries, an infection which is due to another plasmodium, *P. relictum*. Colonel GILL was insistent on our powerlessness with our present knowledge, despite its great advance during the last fifty years, to prevent malaria epidemics, or to control them when they have begun. The need for further investigation was emphasised by his statement that the deaths in this outbreak were about 100,000, that the State relief measures

[1] Amer. Jour. Trop. Med., 1922, ii., 475.

cost £350,000, and that probably over a third of the island's inhabitants were infected, with consequent money loss, ill-health, and misery.

In discussion Sir RICKARD CHRISTOPHERS mentioned the likeness of the Ceylon epidemic to those in the Punjab in 1892 and 1908, the former the greatest ever recorded with 150,000 deaths, the latter covering an area greater than the whole of Ceylon. He described the maps of malaria epidemics as giving the instinctive feeling of "malaria cyclones"; a resemblance not merely superficial since their fundamental cause is meteorological, but still not the whole matter since happenings in previous years had their cumulative results. It was startling, he felt, to picture the sudden outburst of these epidemics as due to relapses, but Colonel GILL's contention needed serious consideration. The next speaker, Colonel S. P. JAMES laid particular stress on a possible widespread invasion of the area by infective anopheles, and said he thought that a relapse wave would imply a primary wave about eight months earlier. He urged the need for further research: especially since there is still no moderately complete account of the life-history of *A. culicifacies* in its adult stage, though it has been known for over thirty years as an important agent in the spread of malaria. Sir MALCOLM WATSON went outside the deliberately limited scope of the paper by dealing with endemic, not epidemic, malaria, and urged the primary importance of the house site in prevention. It was first necessary, he said, to select the proper site for a village and then to go forward with all that was necessary for good sanitation on that site. He insisted that to make the most of funds, first things must be put first, and held that this great epidemic showed that malaria was the major disease problem in Ceylon. Certainly this looks reasonable; nevertheless those who remember an effect of the great influenza pandemic of 1918 will hesitate to accept Sir MALCOLM'S diagnosis without question; for at that time, among 14,640 persons who had been treated for hookworm infection[2] the death-rate per mille was 7·5, whereas among 3253 on the same estate who had been left untreated it was almost double, 13·8. An underlying cause of ill-health may be of greater importance than an evident cause of deaths. The further investigation which this speaker also urged is necessary before there are data for any firm conclusions; and in the meantime we suggest that the result of no constant drain on bodily reserves can safely be disregarded.

Prof. D. B. BLACKLOCK, in referring to the possibility of an epidemic of relapses, mentioned the work reported from Liverpool in the post-war years, which showed that treatment from July to December had a relapse rate of 38 per cent., while a similar treatment in January had one of 94 per cent. He dissented from the view that modern medical science was powerless to prevent and control these epidemics, and held that if the £350,000 spent on relief had been available for prevention the course of events would have been very different. He spoke, then, essentially of endemic malaria, but he further pointed out the difficulty of dealing from that point of view with a free rural population in the tropics. Sir WELDON DALRYMPLE-CHAMPNEYS felt that, as put forward to the Royal Society of Medicine by Dr. R. BRIERCLIFFE and himself,[3] the three most important factors in the causation of this epidemic were the encouragement of breeding of *A. culicifacies* in river pools left by the drying rivers, the fact that the population in the wet zone of Ceylon was little "salted" to malaria, and the semi-starvation of the people owing to partial failure of the paddy crop. He, too, urged the need for concentration on research, and was sure that remarks by Colonel GILL which had been taken as pessimistic were merely meant as pointers to lack of knowledge and stimulants to fill its gaps. Certainly all who commented on his paper were at one with the opener about the need for more intensive study of the problem of epidemic malaria. Colonel GILL has introduced a new and promising line of thought which is certain to be put to the test as soon as opportunity offers. His valuable paper and the informative discussion will be available in full in the coming issue of the Society's *Transactions* (vol. xxix., No. 5).

[2] Rockefeller Foundation, Internat. Health Board, Fifth Ann. Rep., 1919, p. 61.

STANDARD BLOOD COUNTING APPARATUS

WE printed last week a request to hæmatologists from the British Standards Institution for criticism of a specification drawn up for counting chambers and dilution pipettes. This institution, which has done good work in standardising many technical processes used in commerce and engineering, has now turned its attention to the technique of the medical laboratory and has drafted a specification for a standard hæmocytometer. This contains no novelties with the exception that the ruling of the counting chamber embodies features of both the Neubauer and Glaubermann rulings, with one or both of which most workers are familiar. It is manifestly a good thing for laboratory methods to be standardised, so far as this is possible. Few people other than those actually engaged in laboratory work realise the wide divergence in results which may be obtained from the same specimen by the use of different techniques of examination; standardisation of method is the first step towards a valid comparison of results obtained in different laboratories. In selecting the hæmocytometer to start on the British Standards Institution has taken a relatively simple test object; even for this however the specification occupies ten foolscap sheets of typewriting and five sheets of line drawings. The specification is still only in draft form and the institution is anxious that before it is completed it should receive the consideration of all interested parties. Copies of the draft may be obtained on application to the director, British Standards Institution, 28, Victoria-street, London, S.W. 1.

[3] See THE LANCET, 1935, ii., 1176.

ANNOTATIONS

ŒSTRIN AND CANCER

No branch of biological science shows such rapid progress as the study of sex hormones, and unlike advances in our knowledge of other series of pharmacologically active substances, this progress has covered all the aspects of the subject—physiological, pathological, and chemical. There is little doubt that the original stimulus for the work now developing so successfully was the observations of Allen and Doisy, some twelve years ago, which put research on the ovarian hormone on a sound experimental basis. A second great stimulus came through Aschheim and Zondek's recognition of œstrus-producing hormone and prolan in the urine. A year or so later, crystallisation of the former led to the foundation of the accurate chemical investigations in which so many have taken an active and important part.

Some of the most surprising results of this work concern the chemical relationships of the œstrus-producing hormones. Their recognition as derivatives of the sterol series has linked them up with vitamin D on the one hand and such substances as the cardiac aglucones on the other, and it is only natural that this chemical relationship should lead to speculation about the possibility of sex hormones having other actions besides the main one. It has been shown, for example, that many of the male hormone derivatives are œstrogenic, and Zondek's discovery of the œstrus-promoting factor in the urine of stallions indicates the complexity of the physiological activity of these bodies. The further observation that certain carcinogenic substances are also œstrogenic raises the question whether there is some relation between œstrin and malignant disease—a question of more than academic importance now that œstrin in substantial doses is widely used in medical practice. It has been claimed by a number of workers, particularly by Lacassagne, that it is possible to increase the incidence of mammary carcinoma by administration of œstrin, and it has also been pointed out that administration of very large quantities of œstrin will bring about changes in the epithelium of the genital tract of a type which suggest malignant proliferation, although no epitheliomata have been reported. Fortunately, however, we have the clear-cut demonstration, by E. L. Kennaway and his co-workers,[1] that œstrin, when painted on the skin of mice according to the standard technique employed by the Cancer Hospital workers in testing for carcinogenic properties, was entirely without effect. From this it appears that œstrin is not carcinogenic in the same way as 1:2:5:6-dibenzanthracene or methylcholanthrene are carcinogenic. It must be remembered also that the animals in which Lacassagne produced carcinoma of the breast were of inbred stock, selected for susceptibility to cancer, and that the conditions were therefore very different from those of administration of œstrin to human beings. Moreover, as Dr. Cramer and Dr. Horning pointed out in our last issue, all these experiments, including their own, involve the treatment of animals with large quantities of œstrin over a very long period, and here again the conditions do not resemble those of clinical practice.

In reviewing the relationship of sex hormones, carcinogenic hydrocarbons, and synthetic œstrogenic agents, Prof. E. C. Dodds[2] has lately remarked that the similarity, in chemical structure, between carcinogenic hydrocarbons and œstrin is by no means so close as the similarity between the male and female sex hormones; yet there has never been any suggestion that the treatment of women with large doses of œstrin is likely to lead to masculinisation effects.

[1] Proc. Roy. Soc., B., 1935, cxvii., 318.
[2] Ergeb. d. Physiol. u. exp. Pharm., 1935, xxxvii., 264.

GONOCOCCAL EPIDIDYMITIS

THE frequency of infections of the epididymis secondary to gonorrhœa reflects unfavourably on the application of present methods of treating this disease. Various authorities place the incidence of this complication at from 2 to 25 per cent. of all cases of gonorrhœal urethritis, and the average is probably in the neighbourhood of 10 per cent. In fact, though nearly always preventable, it is by far the commonest of all intrascrotal infections. The way in which it is transferred nevertheless remains in dispute. There is little evidence to suggest a blood-stream infection; but the theories of spread through lymphatics or by surface continuity along the mucous membrane of the vas deferens have their advocates, while Pelouze[1] believes that infected material is forced down the lumen of the vas deferens into the epididymal tube—a belief widely shared in the United States. The ætiology of the condition, at any rate, is not in doubt. Trauma to the posterior urethra, in the presence of infection, is the almost invariable cause, and may result either from the patient's indiscretion or the doctor's mismanagement. Unfortunately it seems that the latter is often to blame. The posterior urethra may be damaged by the use of excessive pressure in urethral irrigations, by too frequent irrigation, or by fluid which is too hot or too strongly antiseptic, and a similar result may be produced by prostatic massage or urethral instrumentation carried out too vigorously or too early. On the other hand, the patient may cause or contribute to his own misfortune by sexual and alcoholic indulgence or by vigorous exercise, especially when the bladder is full.

Robertson and Lee[2] have recently described their methods in the treatment of 65 patients with epididymitis, in 90 per cent. of which the infection was known to be gonococcal. They emphasise the importance of avoiding this complication by care in treatment, and once it is established they advocate conservative methods, which proved successful in 63 of their 65 patients. The difficulty of achieving complete immobilisation of the scrotum by the ordinary methods of support, by suspensory bandage or jockstrap, is overcome by the use of an ingenious but simple application of strapping, which is a modification of that used in the Bellevue Hospital, New York City. The scrotum is brought forward to the suprapubic region and there immobilised, while at the same time the scrotal skin is protected from the irritating effects of the strapping by a layer of gauze, and in this way local applications of heat or cold are rendered unnecessary for the patient's comfort and there is no need of operation or admission to hospital. At the same time rest in bed for the first three days is advised. The indication for operation is the persistence of fever and acute pain at the end of this period, and the operation of choice is epididymotomy, which was performed in 2 cases.

The treatment of gonococcal epididymitis by

[1] Pelouze, P. S.: Surg. Clin. North America, 1935, xv., 213.
[2] Robertson, J. P., and Lee, A. B.: Amer. Jour. Surg., 1935, xxx., 462.

surgical incision and drainage has never found favour in this country, and the present support for conservative measures is therefore welcome. In the rare cases where surgical intervention has seemed advisable excellent results have been obtained by simple needling of the globus minor, accompanied where possible by aspiration of pus or inflammatory secretion.

INCENTIVES IN INDUSTRY

EXPERIMENTS recently carried out by C. E. Mace [1] were directed towards determining the efficacy of setting up standards of achievement as an encouragement in the performance of tasks or the learning of them. Measurement of results was necessarily adopted as a criterion of comparison between different standards, and conclusions emerged that should find application in industrial life. The investigation falls into place with other work, such as the study of the actual movements involved in a specific industrial activity, which is aimed at the attainment of optimum results consistent with the comfort and well-being of the worker, without which proviso there is more than a danger that opposition will be aroused against what is regarded as a process of "speeding up." The experimenter in this case is interested in the human side rather than the mechanical, and expresses his appreciation of the larger problems when he hopes that the incentives of industry may ultimately be assimilated more closely to those of professional life.

Industry has changed greatly since the bad old days when a worker was paid as little as possible and driven as hard as his physical powers allowed, his need for the necessaries of life being regarded as sufficient incentive to work. That need will always be a primary urge to human endeavour, but man, for good or ill, is driven by so many other motives that industry is compelled to take account of them. It is a commonplace to lament the decay of handicraft with its gratification of the pride of achievement, which Mr. Mace calls upon in his experimental subjects; and to regret the repetitive processes that accompany mass production and appear to condemn workers to a day of monotony and boredom. Yet it is a discovery of industrial psychology that repetitive work need not be subjectively monotonous or inevitably accompanied by boredom; human nature is so adjustable that with reasonable conditions of work, including rest pauses, such tasks can be happily performed. Rest pauses were introduced, on obvious physiological grounds, to avoid fatigue, and increased output justified them. But some paradoxical results obtained by Elton Mayo suggest [2] that unexpected factors such as a sense of social solidarity in regard to one's fellows and the management of the firm, rather than diminished physiological fatigue, were the cause of the improved output in a batch of workers who were closely observed over an experimental period of two years. This observation indicates a trend of thought that is coming more and more to influence industrialists, who have passed beyond the stage when Factory Acts were necessary to ensure attention to material safeguards of the health of the worker, to sanitation, ventilation, protection against accidents, hours of juvenile labour and, in some cases, rates of pay; their chief function to-day is to protect standards from violation, not to establish them.

The human and social aspects of industrial organisation are now receiving attention, one sign of this development being the employment of industrial welfare workers in factories and similar establishments. In the beginning welfare workers were expected to supervise matters affecting the comfort and material well-being of employees—canteens, amusements, and the like; this they still do, but gradually there is emerging the principle that they serve as interpreters between the ideas of the administrative and employing side and the aspirations or even the dissatisfactions of the workers. An essential in the running of an industrial establishment is attention not only to the material but the emotional welfare of the employees, and in this way the difficulty of adjusting the human element to the demands of modern industry may perhaps be overcome. Welfare workers are now sufficiently numerous to have their own organisation and journal, and they are accumulating knowledge as to the mental attitudes and emotional reactions of individual employees which will fit in with the work of the Industrial Health Board and lead us nearer to the ideal of making the worker happy in his work; for this is, after all, the first condition for the successful working of any system of incentives.

BROMIDE INTOXICATION

OF late years several American observers have thought it well to call attention to the prevalence of bromide intoxication among psychotic, neurotic, and epileptic patients. To such patients bromide is often given for its sedative or anti-convulsive action, and mental symptoms due to too much bromide may pass unrecognised through being attributed to the disease that already exists. This is emphasised in a paper by Preu, Romano, and Brown [1] who describe what they term the symptomatic psychoses of bromide intoxication, and illustrate their description by details of nine cases. General retardation of mental processes, with anorexia and constipation, are well recognised as symptoms of bromism; but further intoxication may, according to these writers, give rise to insomnia, restlessness, disorientation, and loss of memory, followed by ataxia, tremor, and delirium. Refusal of fluid as well as food is common, and still further aggravates the condition, which indeed is most likely to occur in patients who are cachectic, short of fluid and chlorides, or suffering from renal impairment. Sudden onset of insomnia or delirium in a patient taking bromides should always suggest bromism, and the absence of skin lesions in no way negatives this suggestion. Diagnosis can be made with certainty only by an estimation of the bromide content of the blood. If this exceeds 250 mg. per 100 c.cm., the mental symptoms can with confidence be attributed to bromide intoxication. Once the diagnosis is established the rest is easy. Bromide administration is stopped; fluids are administered in large quantities, together with 2 to 3 drachms of common salt a day; and under this treatment the symptoms rapidly disappear.

What dosage of bromide is likely to cause this condition? Unfortunately the evidence on this point is inadequate. In two of the cases the quantity taken was unknown; in the other seven it varied from 60 to 115 grains a day, generally for no very long period, but the doses may have been larger. General clinical experience would, indeed, lead us to suppose that they must have been larger, because

[1] Incentives: Some Experimental Studies. Industrial Health Board Report No. 72. H.M. Stationery Office.
[2] The Human Problems of an Industrial Civilisation. New York: The Macmillan Company. 1933.

[1] New Eng. Jour. Med., Jan. 9th, 1936, p. 56.

very large numbers of epileptics in time past have taken much more heroic doses for prolonged periods without these ill-effects. It may be, however, as Preu and his colleagues suggest, that debilitated patients who for any reason are short of fluid, or whose blood is deficient in chlorides, will react in this unfavourable way to smaller doses. In any case the condition is one which the practising physician should keep in mind.

VASOMOTOR RESPONSES

IN the current number of *Brain* Dr. E. Carmichael and his collaborators report the results of some recent investigations. Their intention was to test the functional capacity of the sympathetic nervous system in normal individuals and in patients suffering from various nerve lesions, particularly cases of hemiplegia. They sought first to ascertain whether there was any difference between the vasomotor response in the normal and paralysed limb.[1] Simultaneous temperature readings were taken from the cheeks and tips of the digits of the hands and feet by means of thermocouples, rectal temperature being also registered by this method. Changes in the temperature of the body were stimulated by the immersion of one or more limbs first in hot and later in cold water. The main outcome of these studies was the demonstration that if one or other foot is immersed in hot water the first change observed is a rise of rectal temperature, quickly followed by a rise in the temperature of both right and left hands, the curve of rise being identical for both upper extremities. On transferring the heated limb to a cold bath the temperature of the other extremities falls at once without any appreciable latent interval. The responses obtained in cases of hemiplegia are exactly the same as those obtained in a normal subject. In a further investigation [2] a more delicate method of estimating the vasomotor reaction was employed. A plethysmograph was applied to a finger or toe in such a way that a slight alteration in the volume of the enclosed digit could be recorded photographically by means of a tambour to which was attached a mirror reflecting a beam of light on to a moving strip of bromide paper. Slight changes in the volume of the digits could thus be continuously recorded. By this method the results previously obtained were amply confirmed and additional observations were made on the effect produced by various extrinsic and intrinsic stimuli. It was found, for example, that the sudden application of pain or cold to any part of the skin, or the occurrence of a sudden noise, produces an almost immediate fall in the volume of the digits in all limbs. This effect is also produced by voluntary deep breathing, by mental activity, and by visceral pain. It was shown that this effect still occurs when the normal blood-supply of the limb is entirely cut off by a tourniquet. In subjects from whom the sympathetic control to one limb has been either removed by operation or destroyed by injury this vasoconstrictor action fails to occur in the affected limb. Further, the stimulus is only effective if applied to a part of the body from which normal sensory nerve conduction is intact. When a painful stimulus is repeated the initial vasoconstrictor effect gradually passes off, even though the last stimuli are as painful as the first. The 23 patients suffering from lesions of the cerebral hemispheres examined all showed responses exactly similar to those obtained with the normal subject. As the lesions in these patients involved between them all parts of the cerebral hemisphere the authors conclude that lesions of the cerebral hemisphere have no effect on the sympathetic vasomotor control of the extremities. They believe, however, that this control is dependent on the integrity of both pre- and post-ganglionic sympathetic fibres and on the integrity of the main sensory pathway from the point at which the body is stimulated. The sympathetic vasoconstrictor responses which occurred so constantly in these experiments were apparent in less than 4 seconds after the stimulus was applied. On the other hand, the vasodilator effects produced on warming the body only developed after the rectal temperature had begun to rise.

[1] Uprus, V., Gaylor, J. B., Williams, D. J., and Carmichael, E. A.: Brain, 1935, lviii., 448.
[2] Sturup, G., Bolton, B., Williams, and Carmichael: Ibid., p. 456.

OWING to the death of King George the annual dinners of the Hunterian Society and of the Medical Society of London will not take place this year.

Mr. C. H. Fagge will deliver the Hunterian oration of the Royal College of Surgeons of England at 4 P.M. on Friday, Feb. 14th, his title being John Hunter to John Hilton.

OWING to inadequate response from candidates, optional translations from Latin and Greek will no longer be set in the membership examination of the Royal College of Physicians of London. More importance will be attached to the translations from French and German, and there will be a definite small allotment of marks for these in the total qualifying marks. They will however remain optional.

THE death occurred at St. Andrew's on Sunday, Feb. 2nd, of Mr. FARQUHAR MACRAE, consulting surgeon to the Western Infirmary, Glasgow, and the first secretary-inspector of the Indian Medical Council.

WE regret to announce the death of Mr. WILLIAM H. BATTLE, consulting surgeon to St. Thomas's Hospital, which occurred on Feb. 2nd, at Woking, Surrey. Mr. Battle earned high esteem from the medical profession both as general surgeon and as specialist in more than one important department, while to this journal he rendered valuable service as a collaborator for over twenty years.

INDEX TO "THE LANCET," VOL. II., 1935

THE Index and Title-page to Vol. II., 1935, which was completed with the issue of Dec. 28th, is now ready. A copy will be sent gratis to subscribers on receipt of a post card addressed to the Manager of THE LANCET, 7, Adam-street, Adelphi, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

PORT REGIS PREPARATORY SCHOOL.—At this preparatory school two scholarships of £100 each are annually awarded to the sons of medical men. The school is at Broadstairs, Kent, and the scholarships were recently founded by Sir Milsom Rees. The next examination will be held on March 3rd, 1936. Candidates must be under 9 years of age at the time of competing, and the scholarships are normally tenable till the holder leaves the school. The holders will be selected at an interview in London from among those boys who have done best in some simple examination conducted in or near their houses. Applications for the scholarships must be addressed to the headmaster, Port Regis School, Broadstairs, from whom full particulars may be obtained. The applications must be made not later than Feb. 20th.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LXXXVII.—PROGNOSIS IN HEMIPLEGIA IN MIDDLE LIFE

HEMIPLEGIA occurs so often as a sudden event in the life of a person who has appeared to be in normal health and is actively engaged in his occupation that the question of prognosis is likely to arise immediately, a forecast being demanded both as to life and to return to activities. In general the prognosis as to life depends on the nature of the cerebral lesion and the vascular condition, while the return of function in recoverable cases depends upon a variety of other factors, not the least being the method of treatment adopted.

Causation

The great majority of hemiplegias result from vascular lesions — hæmorrhage, embolism, or thrombosis.

In my opinion a *hæmorrhage* sufficient to cause hemiplegia is nearly always fatal at the time or soon after. On the other hand a majority (probably from 60 to 75 per cent.) of victims of hemiplegia occurring between the ages of 40 and 65 from thrombosis or embolism survive the event. Estimation of the immediate prognosis depends, therefore, to some extent on detection of evidence of cerebral hæmorrhage, and a guarded one must be given unless this point has been settled. It cannot always be easily settled, nor is it of great immediate importance. If lumbar puncture has been performed, a hæmorrhagic fluid points strongly to cerebral hæmorrhage and to a fatal issue.

If a patient has retained or has fully recovered consciousness the questions which arise are the extent to which he will regain his normal health, and the likelihood of a recurrence of a vascular cerebral lesion. These questions depend upon the state of the vascular system, and will only be briefly summarised here. Hemiplegia from *embolism* is usually an accompaniment of mitral stenosis, and often occurs in patients whose myocardial function is adequate and who are capable of fairly normal activity for many years. In them the liability to recurrence must be considered. It is probable that a second stroke occurs only in a minority; at any rate there may be an interval of many years before it does so, and there are no means of foreseeing to which individuals it will happen. If a second embolus lodges in the opposite side of the brain to the first one the effects are more serious, since pseudo-bulbar symptoms will be produced in addition to the paralysis of the limbs. In cases such as these it is well worth while endeavouring to secure good recovery of motor functions; when the embolism occurs in association with auricular fibrillation or infective endocarditis the prognosis does not justify any serious effort in this direction.

The commonest cause of residual hemiplegia in middle life is *thrombosis*. Here the prognosis as regards recovery from the stroke varies very greatly, according to the cardiovascular condition. It is not nearly so unfavourable in middle life as in the elderly patients in whom it is often seen. In a certain number, however, even of those below the age of 60, an advanced state of arterio-sclerosis makes the prospect of recovery doubtful; further thrombosis may occur, or hæmorrhage may take place into the softened area. Hyperpiesis which persists, or returns after the stroke, not only increases the risk to life, but diminishes the amount of active treatment which is justifiable. These patients must be spared effort and inconvenience, both of which are necessary elements in a successful re-education.

There are, however, a large number of patients who make good recovery from thrombosis and live for many years in a satisfactory state of general health. In some of them the degree of vascular degeneration is remarkably slight, so slight that the cause of the thrombosis seems hard to explain. Most favourable of all are those in whom the lesion is a manifestation of vascular syphilis, which may respond well to treatment. The future of these patients depends on the extent to which muscular power and skill can be restored to the limbs, and more particularly to the hand. It is to the prognosis of residual hemiplegias of this type that consideration will mainly be given here.

Effect of Treatment

Some recovery of function in hemiplegia usually takes place spontaneously, but the final result is one of considerable disability, and falls far short of what may be achieved by suitable treatment. The ultimate outlook can therefore only be considered in conjunction with the mode of treatment adopted, and this should be made clear to the patient as soon as he is capable of realising it. The result in a case which is left to nature may be summarised by saying that the face recovers well, the leg fairly, and the arm badly or not all. The difference in improvement between the two limbs is mainly due to the fact that the sound arm can be used alone whereas the leg cannot; if this can be circumvented the improvement in arm and leg will be similar. In a neglected case the disability is often aggravated by contraction of joint-capsules and ligaments as well as by muscular contracture. If these occur they affect the prognosis unfavourably, as they are difficult to deal with satisfactorily.

The patient's conception of prognosis in hemiplegia is apt to be a gloomy one. He will quote the case of a relative or friend who lost the use of one side, who never recovered it, and for whom "the doctor said there was nothing to be done." If his medical attendant has clear ideas on the subject, is aware that the outlook for uncomplicated hemiplegia is potentially good, and can convince the patient of this fact, he may appreciably improve the prospect.

EXPLANATION TO THE PATIENT

In general the prognosis of hemiplegias, even of a favourable type, is not altogether good; many excellent recoveries are seen, but also many patients whose affected arm is of little use to them. The reason is that a considerable number of them do not obtain, or carry out, a suitable form of treatment, and this circumstance should not be allowed to obscure the fact that the prognosis in an uncomplicated case, treated from the outset on rational lines, is much more favourable. The situation may be represented to the patient as follows: *In the leg* it will probably be possible to prevent the formation of any deformity; he may eventually walk almost normally on the level, but will experience a slight

disability in going upstairs or a steep incline; once he has begun to walk the condition will continue to improve. Should spasm of the calf muscles prove more than usually intractable the result will not be quite so good, but can be improved by small orthopædic measures. *In the arms* there will always be inequality in power, but the affected limb should become capable of use for most ordinary purposes. The grip may be only slightly reduced; extension of the wrist and fingers will be more so. The movement which is most likely to remain defective is supination, and herein lies the chief disability which he will encounter. He may, in fact, be able to lead the life of a middle-aged man in a fairly normal way.

It should be made clear to the patient that this result will not be brought about by drugs or any form of treatment which he undergoes passively, but may be achieved if he will submit himself for some weeks to a régime involving discomfort and tedious effort.

IMPORTANCE OF ACTIVE MOVEMENTS

Having indicated to the patient what he may reasonably hope for, it remains to assist him to bring about his recovery, and the next important factor in prognosis will be found in the extent of his willingness to coöperate. To expect him to make constant effort to use the paretic arm while the sound one is free is to make demands on memory and patience which will seldom be fulfilled. If the sound arm is immobilised by a bandage or splint, continuously at first and intermittently at a later stage, his attempts to use the paretic one will become reinforced by habit, many reflex movements will be performed unconsciously, and the arm will partake of the improvement which takes place as a rule in the leg. The only purely passive forms of treatment which are necessary are full movements of joints to maintain mobility, and to ensure positions of the limbs which will not permit of the formation of deformities.

In the leg, and to a lesser extent in the arm, the prognosis is affected by the duration of confinement to bed. It is much improved if his general condition permits the patient to sit in a chair for part of the day at an early stage, and if, by means of a wheeled frame, he is enabled to perform the movements of walking at a stage when the leg will not bear his full weight. If this treatment is persisted in, and supplemented by suitable exercises, the results are often remarkable, and a bad prognosis should not be given unless it has been tried. All cases do not respond alike, and in a few, although the spasm diminishes, muscular power does not show corresponding improvement.

In the cases considered so far treatment on the lines described has been instituted from the start, before the initial flaccidity has been replaced by spasm. There are, however, many patients in whom this has not been done, because their minds and those of their relatives are set on other measures. A large number obtain faradic stimulation, by which spastic muscles are goaded to further spasm while the re-establishment of nervous paths is not promoted. Many others put their trust in prolonged courses of massage, which is in fact not indicated and diverts attention from measures of real importance. Practitioners will at times be consulted about the outlook in cases of this kind. In them it is always less favourable, but there is hope of improvement in any limb in which the range of passive movement is not restricted. When this range is restricted the question has become an orthopædic one.

Complicating Factors

Uncomplicated hemiplegia has been considered above; the prognosis is often affected unfavourably by concomitant defects in neurones outside the pyramidal tract. The most important of these are expressed by psychic changes, which may be present in almost any form or degree. If they persist they may render successful treatment impossible. But their duration cannot be foretold; quite often they clear up with surprising rapidity after a few days, and they should not be regarded as contra-indications to the line of treatment referred to. Some of the best results I have seen were obtained in patients who were at first completely non-coöperative. In some of them it may be advisable to put the sound arm in a plaster. It will often be found that irritability in itself provides a stimulus for movement, and it is less to be feared than apathy.

Hemi-anæsthesia, usually in the form of a diminution rather than absence of tactile and muscle senses, may accompany a hemiplegia; it impedes recovery to some extent by increasing the awkwardness of the paretic limb. In many cases, however, it undergoes spontaneous improvement, and it does not call for any modification of treatment.

The prognosis in hemiplegia is influenced to a considerable extent, though in different directions, by the side of the body affected. Right hemiplegia in right-handed individuals is more to be feared than left, because it is likely to be accompanied by aphasia, though in thrombosis this does not always happen. But it has been my experience that the prospect of recovery of motor function is decidedly better when the right side is affected. The greatest danger is that the hemiplegic will accept his disability and settle down to the use only of the unaffected arm. It is much more difficult to prevent him from doing so when the sound arm is the one which he uses by choice and by habit. From the purely motor point of view the best recoveries are seen in right hemiplegias, and the most favourable type of case is a right hemiplegia which has escaped aphasia.

NEILL HOBHOUSE, M.D., F.R.C.P.,
Physician, Royal Free Hospital; Assistant Physician West-End Hospital for Nervous Diseases.

ABERYSTWYTH AND CARDIGANSHIRE GENERAL HOSPITAL.—It is proposed to build an entirely new block to this hospital on the site now occupied by the women's ward. A sum of £25,000 will have to be raised to meet the cost of equipment and the provision of 24 more beds.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—For F.R.C.S. primary candidates a course of lecture-demonstrations in anatomy and physiology will be given on Mondays, Wednesdays, and Fridays at 8 P.M., from Feb. 24th to April 24th, at the Infants Hospital, and an evening clinical and pathological class for M.R.C.P. candidates at the National Temperance Hospital on Tuesdays and Thursdays at 8 P.M. from Feb. 25th to March 12th. The following courses will also be held: gynæcology, at the Chelsea Hospital for Women (Feb. 10th to 22nd); chest diseases, at the Brompton Hospital (Feb. 10th to 15th); thoracic surgery, at the Brompton Hospital (Feb. 24th to 29th); orthopædics, at the Royal National Orthopædic Hospital (March 9th to 21st). Week-end courses have been arranged as follows: children's diseases, at the princess Elizabeth of York Hospital (Feb. 22nd and 23rd); chest diseases, at the Brompton Hospital (March 7th and 8th); clinical surgery, at the Royal Albert Dock Hospital (March 14th and 15th). Full details may be had from the secretary of the fellowship, 1, Wimpole-street, London, W.1.

SPECIAL ARTICLES

MEDICINE AND THE LAW

A Conflict of Loyalties

IN October last the German legislature passed an Act forbidding marriage between two persons one of whom is (1) suffering from an infectious illness which may seriously injure the health of the other or of the offspring; or (2) under guardianship for being a spendthrift or insane; or (3) is suffering from a disorder of the mind which would make the marriage "undesirable" in the public interests, or from a hereditary disease. The chief diseases which act as a bar to marriage are venereal disease and unhealed tuberculosis. In other infectious diseases it is for the doctor to make up his mind in each individual case whether there is a grave danger to health. In deciding whether a given marriage is undesirable he must treat it on its own merits. Dr. Schläger, in an article on the new Act,[1] points out that the doctor will in each case have to strike a balance between his duty of secrecy to his patient and his duty to disclose information in the interest of the community. The law binds him, when he can stop an undesirable marriage only by breaking his duty of professional secrecy, to put the public interest first. Naturally it is impossible to lay down any hard-and-fast rules which will fit every case. It is for the doctor ultimately to make up his mind just how much he thinks it necessary to disclose. He may go too far and commit a breach of the law which binds him to professional secrecy. In certain circumstances he might be found guilty of negligence.

German medical men thus have now placed upon them an extremely invidious duty. It seems to have no analogue, fortunately, in English law. Any English physician must notify certain infectious diseases and industrial diseases, but the hardship which this statutory breach of professional confidence may cause is not comparable to the injury which may be done to a patient who consults a doctor in good faith and then finds afterwards that the doctor has played the part of what amounts to a police spy in preventing a marriage which, apart from statute, is no concern of the doctor at all. Mr. Justice Avory tried in 1914 to throw upon doctors the duty of disclosing to the police any cases of abortion which they came across in their practice, and the profession has successfully resisted the imposition of such a repugnant duty. The position of the German doctor is the more difficult in that his duty of secrecy is not only a professional but a legal duty in a far stricter sense than in this country. Our colleagues in Germany are not to be envied the problems they will apparently have to face and the decisions they will have to make under this legislative venture.

Married Women and Doctors' Bills

The Law Reform (Married Women and Tortfeasors) Act of 1935, the relevant section of which came into operation last August, has made a radical alteration in the position of married women in respect of contracts and their liability to pay (amongst other things) the doctor's bill. Before that date a married woman was not personally responsible for her contracts. A judgment could only be obtained against her separate estate (Scott *v.* Morley, 20 Q.B.D. 120), and if she had no available separate estate the creditor was unfortunate, because unless the married woman carried on business either alone or jointly with her husband she was not liable to be made bankrupt. A judgment summons was useless, for although her separate estate was liable, she was not personally liable to pay, and in order to obtain an order on a judgment summons committing a debtor to prison a personal liability to pay has to be proved. As a result of the protection given to married women, doctors, like other purveyors of necessaries, were in the habit of regarding them as contracting as agents for their husbands, and so making the husband and not the wife liable as she pledged her husband's credit and not her own. Whether a married woman contracted personally so as to make her separate estate liable or as agent for her husband was a question of fact. To the question "Whom did you trust, the husband or the wife?" the wise man always answered "the husband." Now he should think twice before giving a reply. If the wife has private means, it might be advantageous to regard her as contracting as principal rather than as agent, since judgments can now be enforced against her as if she were a feme sole. In cases where the worldly goods are in the wife's name—not an uncommon position in many households—the practitioner would be well advised to open the account in the ledger in the wife's name, rather than in that of her husband. There still however remains one snag, for if a testator by his will, dated prior to 1936, gives property to a married woman subject to a restraint on anticipation and dies after 1936, but prior to 1946, such property is not available for creditors. The practitioner might therefore be well advised to ascertain the date of his female patients' marriages.

Card Party for Medical Charity

In Williams *v.* Trevor, a case before Mr. Justice Finlay last week, the plaintiff claimed damages for the loss of a sum of £10,000 at a card party held at Sunderland House at the end of 1934 for the benefit of the Ivory Cross National Dental Aid Fund and the Royal Northern Hospital. He said that he had been invited to attend and that the defendant had assured him that the organisation of the party would be perfect and that everybody assisting would be personally known to the defendant or to members of the committee of the hospital. It was the plaintiff's complaint that the games (which included baccarat and chemin-de-fer) were unfairly played and that card-sharpers were present. Legally, Mr. Williams could establish no cause of action against Mr. Trevor unless there was some breach of contract or breach of duty. When the plaintiff's witnesses had been called and examined, the judge stopped the case. He found no breach of warranty. The letter of invitation to the card-party did not constitute a contract; it was not a warranty but a mere puff. Indeed, though the learned judge seems not to have gone into this aspect of the case, the law declines to recognise a social invitation as having contractual consequences. For instance, if A invites B to dinner and makes elaborate and expensive preparations for his entertainment, A cannot recover damages when B, having accepted the invitation, fails to appear. Mr. Justice Finlay was not quite sure what kind of duty (apart from contractual liability) the organisers of such a party owed to their guests. They must he thought, take reasonable pains to exclude undesirable persons; but he could not rule that there wa

[1] Deut. med. Woch., Jan. 24th, 1936, p. 152.

any positive undertaking that no bad characters would find their way in. One of the risks and evils of such parties was the probability that undesirable persons would be present; everyone attending such a party must be aware of that risk. If Mr. Williams was to succeed, he must further prove damage arising out of the alleged breach of duty. But the evidence, said the judge, seemed to establish the contrary; Mr. Williams, early in the evening, suspected that there was cheating, yet he continued deliberately to play.

Mr. Justice Finlay is not a judge to chatter in court about extraneous matters. The more weight, therefore, attaches to his condemnation of this association of gambling with charity. He said he knew from personal experience how hard it was to raise money for charities; but he hoped that, after this case, no reputable charity would ever resort to so questionable a method of raising money. He quite appreciated that the patrons of the charities for whom the party was given knew nothing about it, but "such methods were to be severely discouraged." The jury associated themselves with his lordship's remarks, and there is every reason to believe that public opinion will agree.

Alleged Morphine Poisoning at Nursing-home

The inquest on Miss Ada Baguley, who died on Sept. 11th at a home in Nottingham, ended last week in a verdict that the deceased met her death by a fatal dose of morphine or heroin or both, and that the dose was feloniously administered to her by Ronald Sullivan and Nurse Waddingham who together conducted the home. The death certificate had originally stated that Miss Baguley died of cerebral hæmorrhage; post-mortem examination showed that this was incorrect. Mr. Baguley, father of the deceased, died in 1929, leaving an estate of £1600 to his daughter, subject to a life interest to his wife. Mrs. Baguley, the 87-year-old widow, died in the home last May. Miss Baguley, her daughter, described as a helpless cripple, had made a will bequeathing the whole of her estate to Nurse Waddingham and Mr. Sullivan in consideration of their looking after her and her mother. Nurse Waddingham at first denied having given the deceased morphia or having had any morphia in the house. Later she stated that she gave Miss Baguley morphia under medical instructions. Her evidence was in conflict with that of the practitioner who attended the deceased. Dr. Roche Lynch, recalled by the coroner, had expressed the opinion that a dose from one grain upward of the morphine preparations mentioned during the inquest would be a positive fatal dose. The chlorodyne medicine which Miss Baguley had been taking would not, he said, have given her any marked tolerance of the drug. He considered that a fatal dose of morphia must have been administered within six to twelve hours of death.

SCIENCE AND INDUSTRY

THE Department of Scientific and Industrial Research has many activities, most of which are unconnected with medicine or surgery, but all have a close bearing on human life and progress. Some account of these researches is given in the annual report of the Department for the year 1934–35 (H.M. Stationery Office, Cmd. 5013, 3s.).

The protection of X ray workers from gamma rays, by remoteness and shielding, has been investigated, and the conclusion is reached that it is undesirable for the personnel to remain in the immediate vicinity of patients undergoing treatment with large quantities of radium. The investigators point out the high degree of protection attainable with properly designed radium safes, the necessity for expeditious bench manipulation of radium containers, and the superiority of bulky postal transport boxes with only moderate lead shielding over small containers utilising the maximum lead shielding possible.

The Food Investigation Board has investigated the destruction of bacteria in meat by α, β, and γ rays and with β particles from radon. In both cases disinfection goes on at the same rate within a very long range of temperature. The effect of varying oxygen pressure on the rate of oxidation of hæmoglobin to methæmoglobin, besides being of theoretical interest, is of importance in the practical problem of the bloom of gas-stored meat and fish. An interesting research was made into the retarding effect of iodised paper wrapping on the rotting of certain fruits.

Fundamental standards, however unattractive to the unlearned, form bases for all exact scientific knowledge, and the National Physical Laboratory has redetermined the freezing point of platinum, obtaining a value (1773·3° C.) in agreement with the results recorded at the national laboratories of Germany and the United States, within the limits of accuracy obtainable at present; other freezing points up to that of iridium (about 2450° C.) are being redetermined. Close agreement with the Physikalisch-Technische Reichsanstalt in the definition of the metre in terms of the wave-length of the red radiation of cadmium has been reached, making this fundamental unit independent of all existing standards.

The various trade research associations have been active in the investigation of problems arising directly out of industry, and perusal of the report should convince readers that the Department is doing fine work in coördinating researches which, directly or indirectly, add to the comfort or safety of civilised life. The measurement of noise, for instance, may eventually lead to the suppression of unnecessary noises—a matter of the greatest interest to all who have the care of the sick. The medical practitioner is likely to find in the report hints towards solving the increasingly complex problems of diagnosis, treatment, and régime. The volume is inexpensive and is not heavy reading.

THE TROPICAL HOUSE

AN OBJECT-LESSON AT LIVERPOOL

INSTIGATED by Prof. D. B. Blacklock, the Liverpool School of Tropical Medicine has rented a piece of land adjacent to the city for the purpose of building small replicas of houses used in different parts of the tropics. The aim of the model is to illustrate the actual disease-producing conditions which exist in each type of defective dwelling along with such simple methods of dealing with defects as can readily be put into operation. This enterprise may not be very remarkable in itself. Models of unhygiene at home and abroad can be found in museums and other instructive places. But what is remarkable is the conviction of Prof. Blacklock and his group that something effective can be done about it, for the fatalistic belief still widely rules that people, and especially native races, get the houses they deserve.

It is no new idea that houses in our tropical dependencies breed disease. Sixty-five years ago Surg. Major David Boyes Smith, then sanitary commissioner of Bengal, wrote as follows:—

"The people live in villages which appal the sanitarian. Every revolting abomination conceivable is to be met with in these villages—obstructed ventilation, corrupted ground, polluted atmosphere, putrid organic matters, fæcal gases, the revolting water tank, with consequent sickliness, debility, degeneration and cachexia of the people,"

and in a Chadwick lecture last year [1] Prof. Blacklock, who cited this appalling word-picture, went on to enumerate the many diseases still directly traceable to defects in housing, indicating categorically those diseases which could be avoided by proper selection of site and of material for construction. In our own rural areas bad housing chiefly connotes such defects as inadequate lighting, dampness, draughtiness, or, what may be worse, lack of ventilation and inadequate air space, and the diseases connected with these defects—rheumatism, bronchial catarrh, and tubercle—though important enough, are relatively few in number. In our urban areas structural defects provide lodgement for vermin, while bad ventilation and overcrowding facilitate the spread of epidemic disease, largely by droplet infection. While all this is serious enough, the problem of domestic hygiene in a temperate climate is simple in comparison with the prevention of the variety of diseases due directly to the type of housing in places where the air is always warm and moist. In the tropics the site of a house selected in ignorance of the dangers from anopheline breeding-places may result in constant malaria with its consequent anæmia, fever, and repeated interruptions of agricultural work. The foundations, floor, and walls of a house composed of dried mud or mud bricks are likely to be the source of relapsing fever and many other infections. The materials of which the roof is composed may conduce to the spread of bubonic plague in endemic areas. These relations of cause and effect were set out three years ago by Prof. Blacklock, entitled "The House and Village in the Tropics" (London. 1932. 3*s*. 6*d*.), which contains among much serious argument an entertaining chapter on the skin of the native child who from the hour of its birth upwards is subjected to a perpetual series of injuries and pin-pricks of every kind—an aspect of tropical medicine to which too little attention has so far been paid.

The conviction is growing that in many parts of the hot regions of the world the reform of housing methods would mark a definite advance in the prevention of disease, and the Liverpool enterprise is to be welcomed as an agent in putting these ideas into practical form. Students who come to Liverpool to study tropical hygiene, professional and business men going out to live in the tropics, may see for themselves some of the manifold ways in which danger to the health of the tropical household arises. While no doubt research is needed into the best methods of house construction and into the choice of materials for building, the object-lesson at Liverpool should afford the stimulus to such research and the incentive to apply it.

[1] THE LANCET, 1935, i., 526.

STAFFORDSHIRE GENERAL INFIRMARY.—The general committee of this hospital have decided to begin work on extensions which will include a new ward for private patients, a new general ward, and a children's ward. X ray, massage, and electrical departments are also to be built.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Capt. A. T. Rivers placed on Retd. List.

Surg Lt.-Comdr. P. B. Jackson to *Drake* for R.N.B.

Surg. Lts. D. Simpson to *Halcyon*, P. K. Fraser to *Aphis*, H. E. B. Curjel to *Carlisle*, and D. Chute to *Curlew*.

The Gilbert Blane Gold Medals for 1935 have been awarded to Surg. Lt.-Comdr. A. A. Pomfret, R.N., and Surg. Lt.-Comdr. W. G. Fitzpatrick.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt. J. D. Lendrum to *Pembroke* for R.M. Infirmary, Chatham.

ARMY MEDICAL SERVICES

Maj.-Gen. J. P. Helliwell, C.B.E., late A.D. Corps, retires on ret. pay.

Maj.-Gen. J. P. Helliwell, C.B.E., late A.D. Corps, relinquishes the appt. of Dir., Army Dental Serv., War Office.

Col. J. V. M. Byrne, late A.D. Corps, appointed Dir., Army Dental Serv., War Office. (See also THE LANCET, Jan. 4th, 1936, p. 42.)

ROYAL ARMY MEDICAL CORPS

R. Hospital, Chelsea.—Maj. J. B. Fotheringham, M.B., R.A.M.C., relinquishes the appt. of Dep. Surg. Maj. E. M. Townsend, M.C., R.A.M.C., to be Dep. Surg.

Temp. Commissions: Capt. A. F. Campbell to be Maj.; R. B. Grey, J. Shields, and P. W. Dill-Russell to be Lts.

ARMY DENTAL CORPS

R. J. Godfrey is granted a temp. commn. in the rank of Lt. (*Vide* also Army Medical Services.)

REGULAR ARMY RESERVE OF OFFICERS

Capt. W. G. Burns resigns his commn. and retains the rank of Capt.

TERRITORIAL ARMY

Capt. P. Dwyer to be Div. Adjt. 50th (Northumbrian) Div., vice Capt. P. F. Palmer, vacated.

Capt. J. J. O'Dwyer to be Divl. Adjt., 55th (W. Lan. Div.), vice Maj. J. H. Bayley, M.C., vacated.

Capt. J. G. Black to be Divl. Adjt., 43rd (Wessex) Div., vice Maj. J. E. Rea, vacated.

Capt. R. V. Powell to be Maj.

J. C. H. Speirs to be Lt.

R. M. H. Anning (late Cadet, Epsom Coll. Contgt., Jun. Div., O.T.C.) to be Lt.

ROYAL AIR FORCE

E. B. Harvey and D. S. MacL. MacArthur are granted short service commissions as Flying Offrs. for three years on the active lists.

D. W. I. Thomas is granted a short service commission as a Flying Offr. for three years on the active list and is seconded for duty at St. George's Hospital, London.

RESERVE OF AIR FORCE OFFICERS

Flying Offr. T. P. Mulcahy relinquishes his commission on appointment to a commission in the Indian Medical Service.

INDIAN MEDICAL SERVICE

Majs. to be Lt.-Cols.: P. Verdon, D. V. O'Malley, O.B.E., and S. A. Phatak.

S. W. Allinson to be Lt. (on prob.).

Lt.-Col. W. D. Keyworth retires.

Indian Medical Department.—Maj. (Sen. Asst. Surg.) R. S. Keelan retires.

ROYAL MANCHESTER CHILDREN'S HOSPITAL.—A year ago this institution launched an appeal for £100,000 for the maintenance of the convalescent home, to add a wing to the nurses' home, and for other necessary extensions. A good start was made and in the first four months after the appeal was issued £10,000 was collected, but the £30,000 figure has not yet been reached.

CORRESPONDENCE

IS COUSIN MARRIAGE DANGEROUS?

To the Editor of THE LANCET

SIR,—There has long been a vague belief that human inbreeding is undesirable, and some unions of blood relations are forbidden by law. Recent research has shown that certain diseases are vastly commoner among the offspring of blood relations than in the general population. In Western Europe, marriages of first cousins rarely amount to more than 1 per cent. of all marriages. The following percentages of first-cousin marriages have been found among the parents of patients with certain diseases :—

	Per cent.
Xeroderma pigmentosum (Siemens's data, after 1906 only)	47
Retinitis pigmentosa (Usher's cases)	27
Juvenile amaurotic idiocy (Sjögren's cases) ..	15
Ichthyosis congenita (Cockayne's data)	14

These examples might be considerably multiplied. Unfortunately, however, research into rare diseases gives us little idea of the importance of the phenomenon for general health.

The fact that the children of first cousins are some thirty times more likely to develop retinitis pigmentosa than the general population does not tell us whether abnormalities of this type (in genetical language, due to rare autosomal recessive gene substitutions) are sufficiently common to render cousin marriage undesirable. Animal experiments give no clear answer. In some species the inbreeding of members of wild populations leads to the appearance of numerous recessive abnormalities. In others it does not. For this reason the Committee on Human Genetics appointed by the Medical Research Council have obtained the coöperation of hospitals in a large-scale inquiry on this question. All patients in the participating hospitals are being asked whether their parents were related, and if so how. It was thought that any less comprehensive inquiry would be worthless, since the data on animals suggest that not only congenital abnormality but liability to certain infections or degenerative diseases might be due to recessive genes.

The preliminary results are distinctly encouraging. Certain rare conditions seem to be rather commoner among the progeny of related than among those of unrelated parents. Nevertheless, the results will not be statistically significant until at least three times the present number of cards have been completed. It is particularly desirable to obtain more data regarding children ; and from country districts, where more inbreeding occurs than in towns. While, therefore, the Committee acknowledge with the utmost gratitude the assistance so far given by hospital staffs, they hope that the same efforts will be continued until really adequate data are available. The coöperation of additional hospitals would also be most welcome.

I am, Sir, yours faithfully,

London, Jan. 31st. J. B. S. HALDANE.

MALARIA EPIDEMIC IN CEYLON

To the Editor of THE LANCET

SIR,—In your account of the discussion at the Royal Society of Medicine on Nov. 16th (THE LANCET, 1935, ii., 1176), which has only recently been brought to my notice, there is room for misunderstanding in the remarks attributed to me. I should be grateful if you would allow me to explain my position. Your report runs : "He (myself) agreed with the use of atebrin *only in hospitals* (my italics) in Ceylon, but thought that this drug would prove to have many advantages owing to its better and more rapid absorption and action. He was sorry that it had been rather pushed into the background." This statement implies that in an epidemic the use of atebrin should be limited to institutional cases solely. Nothing could, in fact, be further from the truth, for it is widely known to-day that peroral atebrin is a well-tried routine remedy in all conditions. Actually in the paragraph quoted above, I was referring to *atebrin musonate*, the new salt of atebrin which is given by injection, and which, being in a trial stage at the time of the epidemic, was suitable only for hospital cases. In my speech I followed up these remarks on atebrin musonate by saying :

"I am sorry to note that the exaggerated idea of using atebrin musonate as a panacea in all cases has caused the *peroral* treatment of atebrin to be relegated into the background. . . . Suitable administration of atebrin has availed to reduce the relapse rate and sequelæ. . . . A treatment combining atebrin and plasmoquine, the drugs given according to a strict schedule on certain days of the week, is very promising, but where there is a floating population it is advisable to give atebrin alone."

I think this quotation should make my views reasonably clear.

I am, Sir, yours faithfully,

Elberfeld, Germany, Jan. 31st. W. SCHULEMANN.

CONTROL OF MEASLES

To the Editor of THE LANCET

SIR,—I have no desire to enter into competition with Dr. Copeman when he claims to have been the first person to introduce into this country the modern method of prophylaxis and attenuation of measles by means of convalescent serum. At the same time, it may interest him and others to know that, mainly due to the stimulus of the late Dr. Claude B. Ker, convalescent measles serum was used in the Edinburgh City Hospital between the months of February and September, 1924. I was then senior assistant to Dr. Ker, and was his collaborator in this experimental work of attempting to immunise measles contacts in certain wards of the hospital. Unfortunately the findings were not published, partly owing to the fact that I left the hospital to take up another post, but mainly owing to the death of Dr. Ker a few months later. The figures seemed too few to publish as a paper, but a few notes may be of interest—even if somewhat belated.

During the month of January, 1924, I took some blood from several adult measles patients who happened to be admitted to the hospital. The blood, taken off about ten days after the rash, was allowed to clot and the serum was pipetted off and a small percentage of phenol added. In that month ward 7 became infected by an incubating case—introducing measles to the ward. The child was probably infectious for three or four days before being removed on Jan. 21st, on which day also another child from the same school occupied a bed on the other side of the ward for a few hours and was diagnosed measles and removed. Of the other 23 children in the ward, all but 7 had a history of measles ; of these 7, 2—one in the next bed to the first case, and the other roughly opposite and three beds away from the second case—were protected by 3 c.cm. of convalescent measles serum. Neither took measles, whereas 4 of the remaining unprotected 5 took measles on Feb. 2nd, 4th, 4th, and 6th respectively.

From the infectious cases above mentioned, treated in side wards, infection was apparently carried to ward 7A

where a small boy developed measles and was isolated on the appearance of his rash on Feb. 14th. Of the 14 children in the ward, 4 had not had measles; all were protected on Feb. 14th. None took measles definitely, but one child on Feb. 26th had a flick of temperature—no catarrh or Koplik's spots—then remission of temperature, and on March 1st a definitely morbilliform rash and a rise of temperature to over 100° F. for one reading. This seemed to have been a case of abortive or modified measles.

In May, 1924, a boy with whooping-cough was admitted to ward 20 and on the next day (May 24th) was isolated for a measles rash which had come out in the night. The exposure of the contacts was in all about 16 hours. The ward contained 15 children, of whom 8 had not had measles. The 8 children received 3 c.cm. of convalescent measles serum on May 25th, nearly 48 hours from the first exposure. None of these children took measles.

Convalescent measles serum was given in several other wards during the summer of 1924, and attenuation of the disease was noticed in many of those measles contacts injected. In one particular case the prodromal period lasted seven days before the rash appeared, and the incubation period in many instances was as long as the twentieth day and once (apparently) the twenty-fourth day, although this was a very doubtful case. During August, 1924, cases of measles occurred in Victoria Park House, a children's home in Edinburgh, and I was asked by the then medical officer of health, Dr. Robertson, to give the contacts some convalescent measles serum. Ten of the 20 children who were contacts had not, according to the history, had measles, but 10 who gave no history of having had the disease were protected with 5 c.cm. of the convalescent measles serum. None of these children took the disease.

Another experiment which was not, however, so successful was carried out in a certain ward of the Craiglockhart Hospital, a poor-law institution near the City Hospital, where an epidemic of measles had broken out among children mainly under two years of age. The serum was given late in the incubation period. Out of 11 contacts who had not had measles, 8 took the disease and 5 of these died later in the wards of the City Hospital to which they were moved.

It could be deduced from these experiments that, if given early enough, convalescent measles serum was of value, not only in preventing but in attenuating the disease.

I am, Sir, yours faithfully,

JOHN MCGARRITY.

Little Bromwich Hospital, Birmingham, Feb. 3rd.

LONDON HOSPITAL CATGUT

To the Editor of THE LANCET

SIR,—A report of an inquest at Cambridge appeared recently in the lay press in which it was stated that death was due to tetanus, and the house surgeon in giving evidence said that he agreed that the infection was from the catgut. There was also in the report the direct implication that the catgut had been supplied by the London Hospital.

This is incorrect. I have been in communication with the secretary of the hospital at which the death occurred, and he writes: "I am glad to be able to inform you that the suspect catgut was not London Hospital catgut." I might add that since the publication by the Medical Research Council in 1929 of the results of the long investigations carried out at this hospital by Prof. Bulloch, in collaboration with Dr. Lampitt and Mr. Bushill, into the "Preparation of Catgut for Surgical Use," the demands for London Hospital catgut have increased very considerably, and we now supply catgut all over the world.

I am, Sir, yours faithfully,

ARTHUR G. ELLIOTT,
House Governor, London Hospital.

Whitechapel, E., Feb. 3rd.

PREMATURE BURIAL

WE have received the following communication: "The Society for Prevention of Premature Burial, founded in 1896, has for its object the reform of the law relating to the granting of death certificates. Until the beginning of this year the Society existed as an independent body, but it is now affiliated with the Council for the Disposition of the Dead Inc., one of whose basic objects is the revision and the codification of the laws relating to death. The Council now have in hand a Bill for the registration of funeral directors. This affiliation has a twofold purpose, (1) the machinery necessary for the reform is strengthened, and (2) overlapping is eliminated. But the internal policy and expenditure of the Society for Prevention of Premature Burial continues, and while informing the public of this affiliation we would like to take this opportunity of seeking further interest and support. Funds and increased membership are earnestly desired. All inquiries should be addressed to the secretary of the Society, 30, Castelnau-gardens, Barnes, London, S.W. 13."

This letter is signed by Major Reginald Austin (R.A.M.C., retd.), Dr. Jane Hawthorne, Dr. J. Lachlan-Cope, Miss Maud Yandell, and Miss Lettice Macnaghten.

PANEL AND CONTRACT PRACTICE

Defaults in Clerical Work

PERSONAL difficulties, encountered in panel practice, are from time to time illustrated by the reports of inquiries (under the Medical Benefit Regulations) into the efficiency of the service rendered by a particular doctor. A recent case from Lancashire shows that his shortcomings can be admitted with frankness by the practitioner and treated with sympathy by the authorities concerned. Between 1925 and 1934 sums amounting to a total of £123 were withheld by the Minister from the moneys payable to the insurance committee, and a corresponding amount was recovered by the committee from the remuneration of the doctor, for the following breaches of the terms of service: failure to furnish divisional and regional medical officers with the required information on Forms R.M.2; failure to keep proper medical records; failure to return to the committee on request the medical records of insured persons removed from his list; and issue of prescriptions on the official form of the committee to persons not on his panel list. The doctor received formal warnings from the Minister on four occasions during 1928 and 1929. A year ago the medical service subcommittee reported on the failure to furnish on request the records of removed patients, and the withholding of the sum of £75 was recommended. Meanwhile, no medical records of insured persons had reached the committee from him since Oct. 1st last, though he undertook a year ago to return all outstanding records within a week or so. No acceptances of insured persons had

reached the committee from him since last September. In March last year the clerk to the insurance committee asked for particulars as to prescriptions issued by him in the previous October, November, and December to persons not on his register; reminders were sent, but elicited no information. These complaints offered considerable material for the allegation that his conduct as a panel practitioner had been such as to bring panel practice into disrepute and that he had repeatedly infringed the terms of service.

The doctor frankly admitted his omissions and stated that he had been treated at all times with great consideration by the committee. While allowing himself the extenuation, if such it be, that he had a natural dislike for clerical work and a "mistaken but stubborn notion that the essential business of a medical practitioner is solely the treatment of ill-health," he candidly confessed his faults but claimed that, at the end of 1933, he had fully appreciated the duty of better clerical work and had then made a great effort to bring his record cards up to date. In 1934 he had cause to be seriously anxious about his own health, and he diagnosed early pulmonary tuberculosis. He acquired an open-air shelter and lived the complete sanatorium life in the grounds of his house, keeping up his visits and attendances on patients but sacrificing everything else to the recovery of his health. He was now able to report a marked improvement in his physical condition. He could claim that he was not a man of vicious habits, and that the clerical side of his private practice had been as badly neglected as the records of his panel work. He stated that he had found paid secretarial help disappointing. At the inquiry he had to admit that 33 cards had still not been returned. The inquiry committee briefly reported that the doctor excused himself in the manner already described but called no evidence of his state of health; he had stated that his sputum was examined by the tuberculosis officer of the county in October, 1934, with negative results. The inquiry committee summed the matter up by saying that, even accepting the doctor's own evidence of his health, it found no sufficient excuse for his continued neglect of his duties. The Minister of Health announces that, after considering the report and taking into account the evidence of the practitioner's personal character and professional standing, he has decided not to remove his name from the medical list of the insurance committee. He makes no order as to the costs of the inquiry.

PUBLIC HEALTH

Mental Hospitals in London

AMONG the many tasks of local government, the care of the mentally affected has become more prominent as it has been exercised with more thoroughness and unity of control. Nowhere better than in London can one see that this duty is a heavy one and that it may be carried out in a spirit of enlightened generosity. A recent report[1] describes many activities in connexion with the 33,000 mental patients for whom the London County Council is responsible. The report deals separately with the mentally disordered, and with the defective patients the majority of whom were until 1930 under the administration of the Metropolitan Asylums Board.

MENTAL DISORDER

For the mentally disordered nearly 700 more beds are being provided, according to plans approved during 1934, and there was also contemplated an additional 360 beds at Ewell. For these and other works an expenditure of £31,000 was authorised; further large sums are being spent on the modernisation and better equipment of individual hospitals. The figures published in this report indicate that voluntary treatment is being more availed of; at the beginning of 1935 the number of voluntary patients in residence was 18·5 per 1000. As the public and those concerned with certification come to realise better that voluntary treatment is permissible and advantageous for many of the certifiably insane, it is probable that the number of direct referrals of voluntary patients will continue to rise and the number of certified patients to fall. The voluntary patients in the mental hospitals cannot in London be considered without regard to the Maudsley Hospital, which during 1934 dealt with nearly 1000 in-patients, all of them by its constitution on a voluntary basis. In its various out-patient departments, including those in North London, 4600 patients were treated. If it were not for the work of this hospital, including that done in a ward of King's College Hospital which is temporarily used as an annexe to the Maudsley, the number under treatment in mental hospitals would be appreciably greater.

So far as direct admissions to mental hospitals are concerned, the proportion these bear to the total population of their district varies between 5 and 9 per 10,000, the average for all London being 7 per 10,000. It would be unsafe to take such figures as fully representing the frequency of insanity in the average population, even if the necessary corrections were made for readmissions and age-groups; criteria used in determining the need for mental hospital care vary in different countries and in different parts of the same country. In the admirably detailed report for 1934 of the commissioner of mental diseases in the State of Massachusetts, which has a population about equal to that of London, the rate for all admissions is shown as 15 per 10,000 of population, far higher in cities than in rural districts. It would not however be fair to conclude that there is a much higher incidence of mental disorder in Massachusetts than in London. The same difficulty is found if an attempt is made to compare rate of discharge or duration of treatment with figures published elsewhere. Among the factors affecting the length of detention is the adequacy of social care likely to be available for discharged patients. Psychiatric social workers, trained to deal with such problems, have been employed experimentally at selected mental hospitals of the L.C.C. since 1931; the appointment of a social worker at each of the ten mental hospitals has now been authorised, in addition to the five who work at the Maudsley Hospital.

MENTAL DEFICIENCY

It is in regard to mental defect that social treatment is most conspicuous in the report. Systematic supervision of defectives in their own homes has been carried out in more than 3000 cases; a third of these are engaged in remunerative work. The Council also maintains fourteen occupation and

[1] L.C.C. Annual Report of the Council, 1934. Vol. VI. Mental Hospitals and Mental Deficiency. Pp. 64. 1s.

craft centres for the training of defective patients outside any institution, while for the 6000 cared for in hospitals and homes there is educational provision and employment, the extent of which may be recognised from the financial appendices to the report.

RESEARCH

The recognition by the Council of the necessity for more than the routine care of the mentally ill, exacting and primary though it be, is strikingly seen in the passages dealing with research and teaching. The Council is responsible for the maintenance of the only university psychiatric clinic in England; as a centre of post-graduate teaching in this branch of medicine, the Maudsley Hospital occupies a place and influence comparable to that of the Henry Phipps Clinic in the United States. The research carried out there, in the wards and the central pathological laboratory, could hardly have been so active and fruitful if the Council had not shown an enlightened concern for these less obvious obligations. Throughout the mental hospitals, as may be seen from one of the appendices, investigation is pursued into the manifold problems of mental illness along varied and profitable lines. Such evidence disposes of the notion that in mental hospitals lethargy is the doctors' portion, as well as the patients'.

CLEAN WATER PROBLEMS

THE Water Pollution Research Board, in addition to its exhaustive survey of the River Tees summarised in a previous issue (1935, ii., 1322), has engaged in many other activities during the past year. These are briefly described in the annual report, in which is included the report of the director of research, Mr. H. T. Calvert, Ph.D.[1]

The work on base-exchange methods of water softening has been continued and materials have been obtained from clays found in Britain which are equal in softening properties to some of the imported materials used for this purpose and are more resistant to disintegration. Experiments with synthetic resins prepared at the Teddington laboratory have shown that some of these possess marked base-exchange properties. Other synthetic resins prepared from aromatic bases such as aniline will remove not cations but anions, so that by the combined use of the two classes the solids in Teddington (equals London) tap water can be reduced from about 33 to 1 part per 100,000, while the same process carried out two or three times will remove most of the salt from sea water. This fact may be of the greatest importance to seamen who, like Bligh of *Bounty* fame, are forced to make voyages in open boats or other small craft where storage for water is so limited that sea water must be distilled, a process which requires not only a still but a supply of fuel to be carried. If Prof. G. T. Morgan and his colleagues can render untrue the words of the Ancient Mariner: "Water, water, everywhere, nor any drop to drink," they will deserve well of all seafaring men.

Work on the activated sludge process of sewage purification goes on under Prof. Topley at the London School of Hygiene. Sludges suited for treatment of special impurities in liquids have been prepared. The effect of bubbling various gases through sewage, directed by Prof. F. G. Donnan at University College, seems to indicate that the production by this means of thin layers, almost all surface, causes a separation of colloid matter, whilst simple stirring has some effect in this direction. We know of cases where this action is being tried for improvement of sedimentation. It is, after all, a common laboratory practice to stir a liquid in which a precipitate has been produced, in order to render the separated substance coarser grained and easier to filter.

The officers of the Board do not rely only on the printed word to make the present state of knowledge of water purification known to interested persons. We have before us a summary of a lecture given by the assistant director, Mr. A. Parker, D.Sc., to the Bristol branch of the Society of Chemical Industry. The effluent from a beet-sugar factory of average size (3 or 4 million gallons a day) would, said Dr. Parker, have about the same polluting action on a stream as the sewage of a city of the size of Bristol, and the waste waters of all the factories in this country would be roughly equivalent to the domestic sewage of London. This shows the magnitude of the pollution from a relatively new industry, and explains the many rivers which have been temporarily ruined by it. Investigations completed by the Board have shown that after simple preliminary treatment the waste waters from such works can be used again in the factory processes, leaving little or no effluent for disposal. What effluent there is can be effectively purified before discharge by biological oxidation in percolating filters. Similarly the effluent from dairies and milk products factories in Britain, amounting in wash waters alone to the equivalent of the sewage from a population of 400,000, can be satisfactorily purified by oxidation, assuming that the whey, skim milk, and buttermilk are not run to waste. The story of river pollution is, said Dr. Parker, one of unbalanced development of industry in districts not already industrialised. In many cases the knowledge of purifying processes was available to render the effluents harmless and to prevent not only the disfigurement of our watercourses but the rendering useless of the water for other industries down stream. The methods whereby the discharge of sewage can be rendered harmless cost money, but it is money well spent, and it may be hoped that by systematic research the cost may be reduced.

[1] Department of Scientific and Industrial Research. H.M. Stationery Office. 1s.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 25TH, 1936

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2505; diphtheria, 1356; enteric fever, 19; acute pneumonia (primary or influenzal), 1376; puerperal fever, 47; puerperal pyrexia, 92; cerebro-spinal fever, 21; acute poliomyelitis, 9; acute polio-encephalitis, 1; encephalitis lethargica, 9; dysentery, 33; ophthalmia neonatorum, 70. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Jan. 31st was 4111, which included: Scarlet fever, 1108; diphtheria, 1081; measles, 578; whooping-cough, 653; puerperal fever, 22 mothers (plus 16 babies); encephalitis lethargica, 282; poliomyelitis, 4. At St. Margaret's Hospital there were 23 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 57 (7) from measles, 7 (1) from scarlet fever, 33 (10) from whooping-cough, 45 (5) from diphtheria, 42 (16) from enteritis under two years, and 104 (20)

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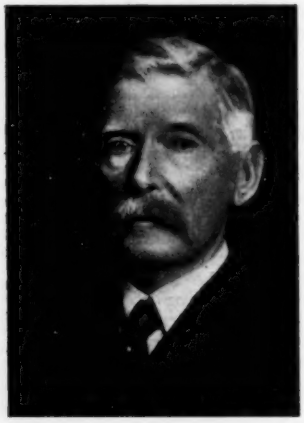
OBITUARY

SIR JOHN MARNOCH, K.C.V.O., M.B. Aberd.

HONORARY SURGEON, H.M. HOUSEHOLD IN SCOTLAND

THE death occurred on Sunday last in Aberdeen, in his sixty-ninth year, of the well-known surgeon Sir John Marnoch, emeritus regius professor of surgery in the University of Aberdeen.

John Marnoch was the son of the late James Marnock of Aberdeen, where he was born in 1867. He was educated at his native grammar school and university (King's and the Marischal College), and graduated as M.B., C.M.Aberd. in 1891 with the highest honours, having previously taken the M.A. degree. He acted as house physician and house surgeon at the Aberdeen Royal Infirmary, and held similar posts at the Aberdeen Hospital for Sick Children, and was marked out for promotion by being appointed assistant to the professor of physiology in the university. He was elected assistant surgeon to the Royal Infirmary, promoted quickly as full surgeon, and filled the post of lecturer on clinical surgery at the infirmary. In 1909 he became regius professor of surgery in the university, a position which he held at the outbreak of war. During the war he was in charge of the section of special surgery, 1st Scottish General Hospital, with the rank of brevet-colonel, A.M.S., and in 1915 received the C.V.O. At different times he held local public appointments as medical officer of the Shipmasters' Society and the Gas Corporation, and as secretary of the Medico-Chirurgical Society of Aberdeen, and was also medical assessor of the district under the Workmen's Compensation Act.



SIR JOHN MARNOCH

[Photograph by Elliott & Fry

From a man with such medical and multifarious public duties no large literary output could be expected, but Marnoch's earlier contributions to medical literature ranged over a large area, contributions from his pen appearing on various clinical subjects in the *Journal of Anatomy and Physiology*, in the *Scottish Medical and Surgical Journal*, in the *Annals of Surgery*, in the *British Journal of Surgery*, the *British Medical Journal*, and *The Lancet*. A paper in the *British Medical Journal* in 1909 on treatment of gastric ulcer gave a useful account of the complications and sequelæ as then understood attendant on the treatment of gastric ulcer, while a paper in THE LANCET, published shortly before, formed a practical contribution to the pathogenesis of cancer. The two essays show how thoroughly well and practically informed Marnoch was. He was appointed examiner in surgery at different times in the universities of Edinburgh and Durham, and was a fellow of the Association of Surgeons of Great Britain and Ireland. He was appointed surgeon to His Majesty's Household in Scotland, and a D.L. for his county. In 1928 he was created K.C.V.O., while in 1932, when his position of regius professor of surgery terminated, he was appointed emeritus professor and received the distinction of LL.D. Aberd.

Prof. J. R. Learmonth writes: "It was my misfortune that I did not meet Sir John Marnoch until after his retirement from active surgical practice; yet so profound an impression had he made on professional life in the north of Scotland, and so frequent are references to his judgment and skill, that it is difficult to think of him as other than still in his hey-day.

"For the first eight years of his professional career, Marnoch carried on a general as well as a surgical practice. This experience was reflected throughout his whole life, for it enabled him to understand the social and economic factors that may influence treatment, and his advice was always tempered by an appreciation of these. He could and did understand the difficulties under which practitioners may have to work, and throughout his long and busy life he was ready to help them in these difficulties, irrespective of any financial return for his services. In 1900 he was elected as full surgeon to the Aberdeen Royal Infirmary, and remained in charge of wards for the long period of 32 years. This period saw rapid advances in the possibilities and applications of surgery, and of these he took full advantage. Early in his career, therefore, he acquired an exceedingly large clinical experience. This he constantly tempered by the exercise of his own judgment; and it is to be noted that he brought to this task intellectual qualities of the first order, which his academic record as a student had promised. In consequence, he soon acquired the power of making rapid judgments, and the almost invariable correctness of these has been traditional. To this power he added operative dexterity that was frequently uncanny. He was never obviously in haste, nor was his extraordinary rapidity of a spectacular type. It was part of the man himself: a ruthless shedding of all but the essential steps, and a minimum of movement in accomplishing these. At the end of each operation he had done his best.

"During the years of the war the combination of his military and civil duties, and lack of assistance, laid upon him a burden that must have been well-nigh intolerable. He never enjoyed really robust health; yet the work he overtook so uncomplainingly would have proved too much for many a stronger man. There is no doubt that the incessant toil of these years contributed to his final illness. As a teacher he was essentially eclectic. He taught

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from influenza. The figures in parentheses are those for London itself.

The mortality from influenza is maintained, the total deaths for the last eight weeks (working backwards) being 104, 89, 110, 110, 80, 67, 62, 45. The deaths this week are scattered over 48 great towns, Manchester reporting 8, Birmingham 7, Leeds 5, Liverpool 4, Bolton 3, no other great town more than 2. Liverpool had to report 13 deaths from measles, Manchester 8, Birkenhead and Warrington each 4, Croydon and Salford each 3. Birmingham had 4 deaths from whooping-cough, Birkenhead 3. Deaths from diphtheria were reported from 35 great towns; 3 from Bury, no other great town more than 2.

The number of stillbirths notified during the week was 260 (corresponding to a rate of 41 per 1000 total births), including 31 in London.

fundamentals, and that dogmatically. His aim was to equip his students with a sound elementary framework on which they might build; and no one was better able than Marnoch to select what was needed for the general practitioner; he knew from experience. The same principle of reduction to fundamentals coloured his whole outlook upon the art and craft of surgery; and it is well that there be those who can assess so broadly. Only three weeks ago, alas, I asked him what knowledge had been of greatest service to him in his crowded life. Without hesitation (and Sir John never hesitated, wherein lay his strength) he replied: 'A knowledge of inflammation, its results and its treatment.' This might well become a motto for surgical class-rooms, in an era when students are apt to be enamoured of intricate procedures. Those who knew him will remember well the click of the tongue with which he commented upon, and so surely relegated to their proper place, the 'ingenious' operations that still find their way into surgical literature. To speak colloquially, what he taught, stuck; and it could not escape the notice of a newcomer to the district, that practitioners trained by him constantly made the comment: 'Sir John used to say.'

"It was characteristic of Marnoch that his pleasures and hobbies were simple, and once chosen remained his life-long solaces. He was a skilled violinist, and for many years delighted in weekly quartettes in which his fellow players were invariably the same. As an alternative, he delighted in Highland music, and it is sad to know that his illness separated him from his violin during the years of his retirement. His sport was salmon-fishing, and this he was able to follow until the summer of 1935, when to his great delight he was able to land the biggest fish caught that year in the Spey. In his friendships his early loyalties were lifelong, and ended only by death. His allegiance, once given, was enduring, and carried with it the invaluable attribute of unbiased comment and criticism; of this I speak with gratitude, for frequently I turned to him as one who would give me wise and penetrating advice; and I never turned to him in vain.

"Marnoch's whole life was determined by his intellectual honesty. He was honest in his surgery; honest in his appraisal of it; honest in his dealings with his colleagues; and honest in his dealings with his fellow-men. He would have despised a panegyric as an obituary notice; his view was that he had given due consideration to his duties, and had then carried them out to the best of his ability. How well he succeeded, a generation of students of Aberdeen can testify."

Sir John Marnoch married in 1900 Agnes Holt, daughter of the late Alexander Macdonald, of Garmouth, whose devoted care did so much to lessen the bitterness of physical incapacity during the later phases of his illness. Of their two daughters, the elder is married to a biologist in Melbourne, the younger is the wife of a physician in Toronto.

JOSEPH WILLIAM ROB, O.B.E., M.D. Camb.

Joseph William Rob, who died in London on Feb. 1st, was born at Skipton-on-Swale in 1876, the son of Mr. J. D. Rob, and received his education at St. John's College, Cambridge, where he was a scholar and graduated as B.A. in 1898 with first-class honours in the Natural Sciences Tripos. He proceeded to St. Thomas's Hospital, where he served as house surgeon and graduated M.B., B.Chir. Camb. in 1902, later proceeding to the M.D. degree. He practised for a time in Thirsk and later at Weybridge, and was medical officer at the Walton-on-Thames Cottage Hospital and the Masonic Institution for Girls. He contributed interesting clinical papers to THE LANCET in 1906 and 1908, and earned a sound reputation as a practitioner.

AMY SHEPPARD, O.B.E., M.B. Lond., D.P.H.

Dr. Amy Sheppard, consulting ophthalmic surgeon to the Elizabeth Garrett Anderson Hospital, died on Jan. 22nd in her 77th year after an illness which had lasted a few months.

The daughter of Thomas Sheppard of Kingswood, near Birmingham, Amy Sheppard was born at Dudley, Worcestershire. She was educated at a private school in Stourbridge, and before taking up medicine, which was at that time still an unusual career for a woman, she studied science at Mason College, Birmingham, now incorporated in the University of Birmingham, whence she matriculated in 1884. She then went to University College, London, and passed the preliminary science examination in 1885 before entering the London (R.F.H.) School of Medicine for Women in October of the same year. She qualified M.B. Lond. in 1892 and decided soon after to specialise in ophthalmology, becoming clinical assistant at the Royal London Ophthalmic Hospital and she continued this work for many years. In January, 1895, she was appointed assistant physician to the Elizabeth Garrett Anderson Hospital (then the New Hospital), but only held this appointment for a few months, resigning it in the following April to become assistant ophthalmic surgeon to the hospital. In 1898, for no other reason than to prepare herself to give a short course of lectures on public health, Dr. Sheppard took the D.P.H. Camb.; though this diploma had been established more than 20 years before she was one of the first two women to take it, the other being the late Dr. Helen Bittell. In 1906 she succeeded Miss Charlotte Ellaby as ophthalmic surgeon to the Elizabeth Garrett Anderson Hospital, a post which she held for 16 years. Dr. Sheppard was also ophthalmic surgeon to the Medical Mission Hospital at Canning Town and medical examiner to the Girls' Public Day School Trust. By the time the late war started Dr. Sheppard was thus well established in her specialty and when the Military Hospital, Endell-street, run entirely by medical women, was established she accepted the invitation to join its staff in the capacity of ophthalmic surgeon. She also acted as ophthalmic surgeon to the Q.M.A.A.C. at Isleworth, and for these services she was made an O.B.E. in 1919. Dr. Sheppard continued her private consulting practice

DR. AMY SHEPPARD

[Photograph by Elliott & Fry

until the late spring of last year when the state of her health caused her to live more and more at the country cottage near Limpsfield which had already been a week-end resort for many years.

Dr. Sheppard might be called one of the pioneer medical women, since she was only No. 140 on the register of the London School of Medicine for Women. She took the greatest interest in the development of opportunities for women in professional and other work. Though she never joined the militant section of the suffragettes she had sympathy with their activities and lost no opportunity of explaining the need for militant tactics to those who were sceptical. She was prominent among those who made a principle of resisting taxation because they had no vote, and as a result more than once her possessions were sold up. Early in her career Dr. Sheppard paid a special visit to India to study cataract operation by the method of "Jullundur" Smith, and on her return recorded her impressions of this technique in a contribution to the *British Medical Journal*. She was a prominent member of the London Association of the Women's Medical Federation, and when she lived chiefly in London regularly attended its meetings. She was always alert to notice new members or visitors and to put them at their ease with a friendly word. Her rather diffident manner concealed decided opinions and she won the respect of her colleagues on the council of the Association by her pertinacity in sticking to her views on important points of principle, though she was always ready to defer to the opinion of others when no great matter was at stake.

Dr. Sheppard was an expert and very clever gardener with a special interest in the culture of lilies. She had a large circle of acquaintances but few close friends; there was something elusive about her which perhaps added to her charm. She will be greatly missed at the gatherings of the London Association and at the larger parties when members of the council of the Medical Women's Federation are entertained.

GILBERT EDWARD BROOKE, L.R.C.P. & S., D.P.H. Edin.

NEWS has reached this country from Singapore of the death of Dr. Gilbert Edward Brooke, formerly chief health officer of the Straits Settlements. The son of the late Capt. E. F. B. Brooke, he was born at Hyères in 1873 and educated at Monkton Combe School, Bath, and at the Ouchy School, Switzerland, whence he proceeded to Pembroke College, Cambridge. He graduated at Cambridge as B.A. in 1894, did not pursue the medical curriculum, but continued his studies at the London Hospital, where he was a prominent footballer. He took the triple Scottish qualification in 1897 and later the diploma of D.P.H., and after brief service in the mercantile marine, became Government medical officer to the East Harbour, Turk's Island, West Indies. He was appointed medical officer of health to the Caicos Islands, while at the time of the war he had been port health officer at Singapore for some years, later becoming chief health officer of the Straits Settlements. At Singapore he was lecturer on hygiene to the medical school, acted as examiner in chemistry and physics, and wrote several small text-books on hygiene, parasitology, and sanitary science from the tropical point of view.

In 1920 there appeared from Brooke's pen a well-written "Manual for Ships' Surgeons and Port Health Officers," in which he informed the ship's surgeon what the sanitary authorities of the port will want from him in the matter of returns, how he can help them most effectively, and how as a consequence he can secure for his ship the shortest delay at quarantine. The double aim of the book was to prevent dangerous conditions from eluding medical observation and to abbreviate periods of detention of the ship that must hamper trade, and the advice was succinct and practical. In the same year there appeared a new and enlarged edition of a work on "Medico-tropical Practice," which had been written some twelve years before and whose favourable reception justified reissue. A communication from him to THE LANCET of March 14th, 1931, set out fully the importance which he considered should be attached to the bills of health carried by sea-going ships, and regretting certain movements made for their abolition. The Far Eastern Health Bureau in connexion with the health organisation of the League of Nations came into existence in 1925 when Brooke was appointed director. His organising work in the collation and distribution of information as to the prevalence of epidemic disease was recognised as of the first value, for the bureau was placed by him in a position to collect regular information from a large number of ports. Similar capacity for strenuous work on organised lines was displayed by him in the construction in Sarawak of a health service; on this he was engaged until the time of his death.

Gilbert Brooke by both his practical labours and literary output, which was large and varied, won for himself a high position in the Colonial Medical Service.

WILLIAM CRAN DUTHIE, M.B. Aberd.

THE death occurred in Blackburn Royal Infirmary on Jan. 24th of Dr. Cran Duthie; he died in the institution with which he was long and valuably associated. The son of the Rev. George Duthie, he was born at Kinkell, Perthshire, in 1871, and was educated at Aberdeen University where he graduated M.B., C.M. in 1893. In the following year he started practice in Blackburn and later was appointed assistant surgeon to the Blackburn Infirmary. He was for 15 years, until his retirement in 1931, a member of the staff where he was popular alike with colleagues and patients, and unanimous expressions of gratitude for his services were expressed by the board on his retirement. Dr. Duthie is survived by a widow and a large family, four of whom are connected with the medical profession, two as doctors—Dr. Lister Duthie being in practice with him—one daughter as a nurse, and another daughter as a radiographer.

HENRY BULLEN BEATTY, L.R.C.P. & S.I.

SURGEON-CAPTAIN R.N., RETIRED

Surgeon-Captain Henry Bullen Beatty, who died on Jan. 21st, 1936, at his residence, in Rathmines, aged 75, was born in Dublin, and educated at Wesley College and at the Carmichael Medical School in that city. He obtained the conjoint qualifications of Ireland in 1884, and joined the medical service of the Royal Navy, where he saw much foreign service, first on the west coast of Africa, and later in the South Seas and on the Australian station. In 1904 he was appointed to the Royal yacht, H.M.S. *Osborne*, and after that appointment, from 1908 to 1911, he was surgeon to the Marines at Chatham. Subsequently he served again on the Australian station, and was due to retire in 1914, but owing to the outbreak of the war he was retained in the service until 1917. He returned to Dublin in broken health, but

was able a year later to assist in establishing the earliest Pensions Boards in Dublin. For several years he was engaged in pensions work, acting as chairman of boards, a work for which he was specially fitted by his quick grasp, his knowledge of regulations of procedure, and his judicial mind. Those who worked with him found him a very fair, efficient, and pleasant chairman. During the last five years his health failed badly, and he was rarely able to leave the house, but his interest in world and domestic affairs was unimpaired.

ARCHIBALD ALEXANDER GEORGE DICKEY, M.B.E., M.D. R.U.I.

Dr. Archibald Dickey, who died on Jan. 19th at the age of 74, was a well-known physician in Colne and later in Bolton. He was for 33 years in practice at the former centre and for 15 years at the latter, only leaving on his retirement a few months ago. He received his medical education at Queen's College, Belfast, was a scholar and prizeman, took the double Irish diploma, and in 1883 graduated as M.D. R.U.I. At Colne he was in charge of the Military Hospital during the war and was awarded the M.B.E. He was a justice of the peace for the borough, surgeon to the Post Office and the St. John Ambulance Brigade, and honorary medical officer to the Cottage Hospital. When in 1921 he left Colne to practise in Bolton, he held various public appointments and continued his interest in the work of the St. John Ambulance Brigade. He died at the residence, in Pwllheli, of his son, Dr. H. W. Dickey.

MEDICAL NEWS

University of Cambridge

Dr. Samuel Nevin has been appointed to the Pinsent-Darwin studentship for the study of mental pathology. He has lately held a Halley Stewart research fellowship at the National Hospital, Queen-square.

University of London

Prof. H. H. Woollard has been appointed as from Oct. 1st, 1936, to the university chair of anatomy tenable at University College. Since 1929 he has been professor of anatomy at St. Bartholomew's Hospital medical college, having previously held the chair of anatomy at Adelaide University.

The title of reader in pharmacological chemistry in the University has been conferred on Mr. H. R. Ing, D.Phil., in respect of the post held by him at University College.

Dr. Ing was born in 1899, and was educated at Oxford High School and at New College, Oxford, where he graduated as M.A. in 1921 and D.Phil. in 1924. From 1923 to 1925 he was a university demonstrator in organic chemistry at Oxford, after which he went to Manchester with a Ramsay memorial fellowship. In the following year he became research chemist for the Manchester cancer committee, and in 1928 he came to London to take up his present post as lecturer in pharmacological chemistry at University College.

The William Julius Mickle fellowship for 1936 has been awarded to Dr. H. P. Himsworth, deputy director of the medical unit at University College Hospital medical school.

Owing to the illness of Dr. H. M. Traquair, the lectures on Perimetry, which were to have been given at University College Hospital medical school on Feb. 10th and 11th, have been postponed.

Royal College of Physicians of London

At a meeting of the College held on Jan. 30th, with Lord Dawson of Penn, the president, in the chair, it was announced that the Gilbert Blane gold medals for 1935 had been awarded to Surgeon Lieutenant Commander A. A. Pomfret and Surgeon Lieutenant Commander W. G. Fitzpatrick. Dr. Rupert Waterhouse was appointed a representative on the medical advisory committee of the British Health Resorts Association. The Harveian librarian announced the presentation by Prof. Roy Dobbin of a sumptuously bound copy of the manuscript of Ibn Al-Naphis, which dates from the thirteenth century, and in which is the first-known description of the Mechanism of the Lesser Circulation.

Dr. E. L. Middleton will deliver the Milroy lectures on industrial pulmonary disease due to the inhalation of dust, with special reference to silicosis, on Feb. 27th and March 3rd; Dr. R. A. McCance the Goulstonian lectures on medical problems in mineral metabolism on March 5th, 10th, and 12th; Dr. John Parkinson the Lumleian lectures on enlargement of the heart on March 17th and 19th; and Mr. Joseph Needham, Sc.D., the Oliver-Sharpey lectures on chemical aspects of morphogenetic determination on March 24th and 26th.

The following candidates, having satisfied the censors' board, were admitted members of the College:—

Felix Wilfrid Arden, M.D. Adelaide; Sailendra Mohon Basu, M.B. Rangoon; James Frederick Brailsford, M.D. Birm.; Geoffrey Oswald, Atyeo Briggs, M.B. Camb.; Francis Hayling Coleman, M.B. Camb.; Leybourne Stanley Patrick Davidson, M.D. Edin.; Richard Heyworth Dobbs, M.B. Camb.; Colin Campbell Edwards, M.B. Sydney; David Stanley Fairweather, M.B. Edin.; David George Ferriman, M.B. Oxon.; Alan Morton Gill, M.D. Lond.; Arthur Rupert Hallam, M.D. Edin.; Ernest Arthur Hardy, M.B. Lond.; Herbert Edward Holling, M.B. Sheff.; Philip William Hutton, M.B. Camb.; Alan Leon Jacobs, M.B. Oxon.; Evan Idris Jones, M.B. Lond.; Francis Avery Jones, M.B. Lond.; Edwin James Reid Leiper, M.B. Aberd.; Jack Watson Litchfield, M.B. Oxon.; Leo McGoldrick, M.B.N.U. Irel.; Wilfrid Marshall, M.D. Aberd.; James Lister Newman, M.D. Camb.; John William Osborne, M.B. Sydney; John Scholes Parkinson, M.B. Manch.; Abdel Aziz Sami, M.B. Cairo; Alice Mary Stewart, M.B. Camb.; Charles Henry Stewart-Hess, M.B. Liverp.; Harold Midgley Turner, M.D. Manch.; and Rustom Jal Vakil, M.B. Lond.

Licences to practise were granted to 140 candidates (132 men and 8 women) who have passed the final examination of the Conjoint Board. The following are the names and medical schools of the successful candidates:—

A. W. Abramson, Camb. and St. Thomas's; Ruth M. Addison, Roy. Free; G. W. Alderman, London and Leeds; Sivasithamparam Balasingam, King's Coll.; E. J. W. Barnard, St. Bart.'s; H. F. Barnard, Westminster; A. B. Baxter, Guy's; David Bobker, Charing Cross; E. S. Bompas, St. Thomas's; A. W. Bone, Camb. and London; J. C. B. Bone, Middlesex; R. E. Bonham-Carter, Camb. and St. Thomas's; J. P. Brazil, St. Mary's; B. B. Bridges, Guy's; D. H. D. Burbridge, Middlesex; J. C. Busby, Camb. and St. Mary's; L. S. Calvert, Leeds; Josephine H. Campbell, King's Coll.; W. W. Cashmore, Guy's and Birm.; S. R. Chandra, Calcutta; E. P. Clarke, St. Bart.'s; J. H. Coles, King's Coll.; Kathleen Craddock, Roy. Free; Montague Curwen, Middlesex; C. S. Darke, Guy's; J. E. A. David, Camb. and St. Bart.'s; J. R. Davidson and H. J. Davies, Univ. Coll.; J. N. Deakin, Birm.; G. G. Doel, King's Coll.; B. J. Doran, Guy's; C. A. Dowding, Camb. and King's Coll.; H. G. Earnshaw and R. B. Evans, London; F. I. Firth, Manch.; Robert Fleming, Geneva and London; C. B. Franklin, St. Bart.'s; D. F. Freebody, Guy's; J. E. Garson, Madras and West London; Joyce M. George, King's Coll.; Jaharlal Ghosh, Calcutta and St. Bart.'s; D. R. Gibson, St. Mary's; Sholem Glaser, Cape and London; Louis Greenbaum, London; J. C. Harland, Westminster; H. R. S. Harley, Guy's; G. D. Harthan and John Heginbotham, Manchester; A. G. Hemsley, Middlesex; G. H. M. Hemsted, St. Mary's; R. K. R. Henry, A. G. W. Hill, and B. W. Hunt, Guy's; C. W. Hutt, Camb. and St. Bart.'s; W. G. Hutton, Camb. and Leeds; Mohammed Inayatullah, Agra and Manch.; Meir Irving, Charing Cross; Gwyneth M. Jenkyn-Owen, Roy. Free and West London; A. C. Jones, Middlesex; S. E. L. Kahla, Sydney and London; Ernest Kaplan and H. M. Kelsey, Guy's; K. C. Kershaw, Manch.; F. B. Kiernander, St. Thomas's; W. J. Latham, London; L. R. Leask, St. Bart.'s; H. A. Leggett, Guy's; Maurice Lewis, Univ. Coll.; R. N. A. Leyton, Camb. and Westminster; Milton Lipson, Charing Cross; S. E. Littlepage, Manch. and St. Bart.'s; J. M. Lockett, St. Bart.'s; R. D. McDonald, Cape and London; J. T. Mair, Westminster; C. W. Maisey, St. Thomas's; Simon Marinker, Middlesex; H. A. C. Mason, St. Thomas's; Leslie Merrill, Guy's; P. J. W. Mills, St. Bart.'s; A. G. Moore, St. Thomas's; F. T. Moore, St. Bart.'s; Margaret J. Moore, Roy. Free; F. L. E. Musgrove, Guy's; R. O. G. Norman, Camb. and London; J. D. Ogilvie and W. A. Oliver, St. Bart.'s; W. V. Owen, Camb. and Westminster; D. E. Parry, St. Mary's; J. C. Patel, Bombay; N. O. Paterson, Guy's; E. N. Pearlman, Middlesex; John Pemberton, Univ. Coll.; R. R. Prewer, St. Bart.'s; D. E. Price, St. Mary's; Joseph Rabinovitch, Leeds; O. N. Ransford and H. W. Rees, Middlesex; J. L. Reid, Oxon. and Middlesex; Guy Rigby-Jones, Camb. and St. Thomas's; Barnard Robbins, King's College; A. N. Roy, St. Bart.'s; P. S. Sambandam, Madras and West London; L. J. Sandell, St. Bart.'s; H. V. Sankarayya, Mysore and London; Eric Sayle, Guy's; Morris Schwartz, Univ. Coll.; Rupert Solley, Camb. and London; G. C. Steel, Middlesex; D. E. Stephens, Cape and St. Mary's; B. P. Stone, Camb. and King's Coll.; J. S. Stuart, Guy's; F. J. E. Stuhl, Camb. and Westminster; K. H. Sugden,

St. Bart.'s; C. H. Tanner, Cardiff; B. W. Thomas, Univ. Coll.; Dorothy J. Thompson, Camb. and Bristol; T. H. Tidswell, St. Bart.'s; R. C. Tudway, Univ. Coll.; R. G. Tuke, St. Thomas's; J. E. Underwood, St. Bart.'s; G. J. can der Merwe, Cape and Guy's; C. W. H. Van der Post and W. M. Van Essen, Guy's; G. L. Wainganker, Manch. and West London; G. W. Ward, Manch.; J. H. Ward, Camb. and St. Bart.'s; A. G. Waters, Cardiff and London; S. A. Way, Middlesex; Samuel Weinstock, London; J. L. Whatley, Birm.; R. R. Willcox, St. Mary's; E. G. Williamson, Camb. and Birm.; Louise F. Wilson, Yale and West London; Anthony Winder, Camb. and London; H. L. Wolfe, St. Bart.'s; L. A. C Wood, Camb. and St. Thomas's; J. E. Wooding, Camb. and St. Bart.'s; G. N. Wright, Guy's; P. L. Young and W. J. Young, St. Bart.'s.

Diplomas were granted jointly with the Royal College of Surgeons to the following candidates:—

Diploma in Public Health.—S. D. Elliott, R. J. Farnbach, R. A. Jones, G. G. Kayne, W. F. Lane, Catherina E. Murray, C. R. Naidu, and T. S. Rodgers.

Diploma in Psychological Medicine.—J. L. Bates, A. J. Galbraith, J. F. Galloway, S. L. Last, S. A. MacKeith, W. H. McMenemey, K. R. Masani, J. A. Smeal, Alfred Torrie, Rosalind Vacher, and J. H. Watkin.

Diploma in Laryngology and Otology.—B. T. Bernstein, G. B. Ludlam, R. F. J. Martin, Narayana Srinivasan, T. G. Swinburne, and W. E. Williams.

Diploma in Tropical Medicine and Hygiene.—W. K. Cheng, Anastasio D'Souza, J. S. Gibson, Kalidas Mitra, and V. T. Vagh.

Diploma in Medical Radiology.—E. W. Casey and Frank Ellis.

Diploma in Anæsthetics.—Olive M. Anderson, H. B. Logan, S. D. McAusland, G. R. Phillips, K. B. Pinson, Benjamin Weinbren, H. L. Willey, and C. H. Wilson.

Society of Apothecaries of London

At recent examinations the following candidates were successful:—

Surgery.—R. H. Bembridge, King's Coll. Hosp.; H. A. Koretz, Univ. of Manch.; and G. N. Rodgers, Bombay and West London Hosp.

Medicine.—F. E. Bedell, St. Mary's Hosp.; M. G. H. Jones, Welsh National School of Medicine; and R. L. Walmsley, Univs. of Camb. and Leeds.

Forensic Medicine.—F. E. Bedell, St. Mary's Hosp.; N. Bickford, Middlesex Hosp.; E. E. Evans, Guy's Hosp. and St. George's Hosp.; M. G. H. Jones, Welsh National School of Medicine; and R. L. Walmsley, Univs. of Camb. and Leeds.

Midwifery.—J. D. Anderson, St. Bart.'s Hosp.; G. B. Barbour, Univ. of Camb. and Guy's Hosp.; E. E. Evans, Guy's Hosp. and St. George's Hosp.; E. M. Frankel, Westminster Hosp.; D. L. Jones, Univ. of Liverp.; J. P. McGuire, Calcutta and St. Mary's Hosp.; I. M. Monare, Royal Colleges, Edin.; and C. J. S. Sergel, Univ. of Camb. and St. Mary's Hosp.

The following candidates, having completed the final examination, are granted the diploma of the society entitling them to practise medicine, surgery, and midwifery: G. B. Barbour, R. H. Bembridge, J. P. McGuire, G. N. Rodgers, and R. L. Walmsley.

Scottish Conjoint Board

At recent examinations by the board of the Royal Colleges of Physicians and Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow, the following candidates were successful:—

Eric Greenhalgh, O. S. Sela, Vartheanather Nadarajah, O. W. Marienfeld, N. S. Mohammed, F. H. Wilson, P. C. Burgess, J. H. Lichtenbelt, Harold Jacobs, Edith H. Busse, D. A. S. Martin, L. L. Harrop, Fritz Buchsbaum, Alfred Rosenbaum, Molleurus Couperus, F. J. Beaton, Irving Dolsky, Alexander Crawford, Viktor Klare, R. M. Boveri, H. I. Russek, A. J. Snyder, N. R. Janes, O. K. Khallaf, K. G. Naidoo, Mirajud Din, Emma Pines, Harry Friedman, S. H. Fuchs, K. T. Bluth, Sophia V. Elgey, L. O. Adesigbin, S. F. Auerbach, K. M. El-Moshneb, and W. W. Weir.

Pharmaceutical Society of Great Britain

A meeting of this society will be held at 17, Bloomsbury-square, London, W.C., on Tuesday, Feb. 11th, at 8.30 P.M., when Prof. E. C. Dodds will give a lecture on chemical and pharmacological aspects of the hormones.

Presentations to Medical Men

Kelso.—Dr. A. D. Fleming, who is retiring after 45 years' medical practice, has received a standard lamp from the people of the burgh in recognition of his services to them. *Aboyne.*—A cheque has been presented to Dr. W. Brodie Brown who, after 35 years' practice in the district, has been succeeded by his son. *Hove.*—Dr. H. C. Upton has been given an illuminated address in commemoration of 44 years' service on the governing body of the town, for 27 of which he has been an alderman. He is now 90 years of age. *Uxbridge.*—At the Uxbridge and District Cottage Hospital Dr. George Black was recently presented with a cheque from his colleagues and friends. Dr. Black, who has been in practice in the town for 15 years, is retiring to Hurstpierpoint.

New Hospital for Basingstoke

A good site has been secured for the erection of a new hospital at Basingstoke for which £1800 has been paid.

Hunterian Society

On Monday, Feb. 24th, Sir Lenthal Cheatle will deliver the Hunterian oration of this society at the Mansion House, London, E.C., at 9 P.M. He will speak on John Hunter's Time and Ours. The annual dinner of the society has been cancelled.

Milk for Juvenile Workers

Messrs. Peek Frean and Co. are offering their juvenile workers, some hundreds in number, a one-third-pint bottle of milk at ½*d.* per bottle. On Wednesday afternoon the first bottles under this scheme were handed to the workers by the chairman of the Milk Marketing Board.

Developments at Bath

A method is in future to be used at Bath by which the waters can be atomised for inhalation purposes without lowering their temperature. After sterilisation they are carried through a specially designed electric heater. A new kind of aeration bath is also to be installed, which represents a development of the whirlpool bath and offers the advantages of gentle massage.

National Temperance League

On Friday, Feb. 14th, at 5 P.M., Mr. W. McAdam Eccles, consulting surgeon to St. Bartholomew's Hospital, will deliver the second Rae memorial lecture at the London School of Hygiene and Tropical Medicine, Keppel-street, on Progress and Problems. The chair will be taken by Sir Henry Brackenbury, and Mr. Eccles will illustrate the test for the determination of the actual percentage of alcohol circulating in the blood, especially in relation to road accidents.

New Nurses' Home at Hammersmith Hospital

On Tuesday the London County Council considered spending £104,600 in providing new accommodation for the nursing staff of Hammersmith Hospital. Of the 159 nurses now at work there, 82 occupy the nurses' home and a converted block of the former institution, 17 are housed in the administrative block, 33 in other parts of the hospital, and 27 have to live out. The non-resident nursing staff will be increased to nearly 180 when the new ward block is completed and the former institution reconditioned. The new home, to be completed in the spring of 1938, will be a separate building in the north-west corner of the ample site, six storeys in height, and containing 304 separate bedrooms.

Tuberculosis in Russia

The campaign against tuberculosis in the Soviet Union was discussed at a recent All-Union Conference of Tuberculosis Institutes, which decided on the next steps to be taken. Before the late war, it is stated, there were only about 300 sanatorium beds in Russia, together with some special hospital wards and dispensaries supported by charity. The death-rate from tuberculosis was very high, reaching 33·6 per 1000 in St. Petersburg. To-day there are said to be 500 dispensaries in the All-Russian Republic alone, many of them with day sanatoria; over 26,000 beds are available for adults and children in the sanatoria, and special hospitals for the tuberculous, and more than 27,000 physicians are employed in these institutions. Fourteen provincial institutes and a Central Tuberculosis Institute have been established in the same territory, and each year some 500 doctors take special courses on the treatment of the disease.

Appointments

ADAMS, MARY I., M.B. Belf., D.P.H., has been appointed Assistant Medical Officer for Hammersmith.

CARTWRIGHT, F. F., M.R.C.S. Eng., D.A., Assistant Anæsthetist at King's College Hospital.

CRITCHLEY, MACDONALD, M.D. Brist., F.R.C.P. Lond., Neurological Physician to the Royal Masonic Hospital.

DANCY, NAOMI, M.B. Lond., Assistant Medical Officer for Hammersmith.

LINDSAY, E. C., M.B. Lond., F.R.C.S. Eng., Surgeon to the Royal Masonic Hospital.

PARLIAMENT

NOTES ON CURRENT TOPICS

Voluntary Hospitals (Paying Patients) Bill

IN the House of Lords on Feb. 4th the Voluntary Hospitals (Paying Patients) Bill was considered in Committee.

On the motion of Lord LUKE, several amendments, mainly of a drafting character, were agreed to.

The principal amendment made was in Clause 6, Subsection 3. As printed in the Bill this read: "(3) Except to the extent of an application of funds authorised under subsection (2) of section 3 of this Act, an Order authorising the provision or maintenance of any buildings or beds shall not be construed as conferring on the committee of management any power, which apart from the Order would not be exercisable by them, to apply funds in the provision or maintenance thereof."

On Lord Luke's motion, the following new subsection was inserted: "(3) Except to the extent of an application of funds authorised under subsection (2) of section 3 of this Act an Order shall not be construed as authorising any application of funds."

HOUSE OF COMMONS

TUESDAY, FEB. 4TH

Government and the Distressed Areas

Miss WARD asked the Prime Minister whether he was in a position to make a statement to the House regarding the progress made with plans to deal with the distressed areas.—Mr. E. BROWN, Minister of Labour, replied: Considerable progress has been made by the commissioners in a number of directions in promoting the industrial development and social improvement of the special areas since their last reports were published. Further reports for the six months to Dec. 31st, 1935, are expected shortly, and these, too, will be published in due course.

Unemployed Persons and Insurance Benefits

Mr. DOBBIE asked the Minister of Health whether he was aware that many unemployed persons who became voluntary contributors after Dec. 31st, 1932, and who, owing to their economic conditions, were unable to keep up their contributions, had had to allow their insurance to lapse and were outside the scope of Section 14 of the Act of 1935; and, having regard to the serious hardship of having lost all health insurance and pension benefits, what steps would be taken to give this class the benefit of that section.—Sir K. WOOD replied: The only persons who can be in the position referred to by the hon. Member are those who became voluntary contributors after Dec. 31st, 1932, but paid no contributions in respect of any week subsequent to Dec. 31st, 1933. I have no power to deal with such cases generally by Regulations under Section 14 of the Act of 1935, but if any individual case is brought to my notice I will have it investigated in order to see whether on the facts of that case there is any possibility of securing continuity of insurance.

Unhealthy Basements and Condemned Houses in London

Mr. DAY asked the Minister of Health whether he could state, according to his latest reports, the number of unhealthy basements and condemned houses there were in the County of London; what steps were being taken to deal with the same; and the number of families living more than two and more than three in one room, with separate figures for the borough of Southwark.—Sir K. WOOD replied: According to returns obtained by the London County Council in 1934 there were in London 20,108 underground rooms, including 86 in the borough of Southwark, used for sleeping purposes which were deemed unfit for human habitation within the meaning of Section 18 of the Housing Act, 1925. Action for closing such rooms is proceeding: extended powers for this purpose have been given by the recent Housing Act. As regards the second part of the question, I am not clear what information the hon. Member desires. The total number of houses scheduled for demolition in the programme submitted by the L.C.C. in 1933 is 33,000. Action with a view to demolition has been initiated in respect of 10,500 houses, including 757 in the borough of Southwark. As to the last part of the question the latest particulars available are contained in Table II. in the 1931 census for the County of London.

Road Accidents in 1935

Mr. MCENTEE asked the Minister of Transport the number of persons killed and injured in road accidents during 1935, giving separate figures for pedestrian crossing-places.—Mr. HORE-BELISHA replied: Approximately 6550 persons were killed in road accidents in Great Britain in 1935 as compared with 7343 in 1934. Approximately 219,000 were injured as compared with 231,603 in the previous year. 1935 is thus the first year since the war to show an over-all reduction in casualties. Separate figures for fatalities on pedestrian crossing-places will not be known until the fatal accident returns for 1935 have been received and analysed.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, Feb. 11th.
Therapeutics and Pharmacology. 5 P.M. Dr. H. P. Himsworth: Physiological Factors Influencing the Action of Insulin. Mr. H. P. Marks, Dr. Levy Simpson, and Dr. M. W. Goldblatt will also speak.
Psychiatry. 8.30 P.M. Dr. E. T. O. Slater: The Inheritance of Manic-depressive Insanity.
FRIDAY.
Clinical. 5.30 P.M. (Cases at 4.30 P.M.) Dr. T. C. Hunt: 1. Persistent Œdema with Cyanosis, ? Nature. *Ophthalmology.* 8.30 P.M. (Cases at 8 P.M.) Mr. John Foster: Vitamins in Ophthalmology. Mr. Arnold Sorsby and Miss L. R. Benham: Allergic Tests in External Eye Conditions.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W.
MONDAY, Feb. 10th.—8.30 P.M., Mr. C. S. Lane-Roberts: Treatment of Sterility.

NORTH-WEST LONDON MEDICAL SOCIETY.
TUESDAY, Feb. 11th.—9 P.M. (The Regal Rooms, Regal Cinema, Finchley-road, N.W.), Dr. J. Russell Reynolds: Cineradiography.

PADDINGTON MEDICAL SOCIETY.
TUESDAY, Feb. 11th.—9 P.M. (St. Mary's Hospital, W.), Dr. G. B. M. Heggs: Practical Demonstration on Selected Cases of Skin Disease commonly met with in Practice.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.
FRIDAY, Feb. 14th.—8.45 P.M. (Miller General Hospital, Greenwich, S.E.), Dr. Geoffrey Bamber: The Treatment of Some Common Affections of the Skin.

SOUTH-WEST LONDON MEDICAL SOCIETY.
WEDNESDAY, Feb. 12th.—9 P.M. (Bolingbroke Hospital, Wandsworth Common, S.W.), Mr. C. D. Read: The Problem of Abortion and Sterilisation.

NORTH LONDON MEDICAL AND CHIRURGICAL SOCIETY.
THURSDAY, Feb. 13th.—4 P.M. (St. Mary, Islington, Hospital), Dr. W. R. M. Turtle: Clinical Demonstration.

BIOCHEMICAL SOCIETY.
FRIDAY, Feb. 14th.—4 P.M. (London School of Hygiene, Keppel-street, W.C.), Short Communications and Demonstrations.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY.
THURSDAY, Feb. 13th.—8.30 P.M. (11, Chandos-street, W.), Dr. Frank Gray: The Psychopathology of Organic Disease.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.
MONDAY, Feb. 10th.—5 P.M., Mr. G. C. Knight: Intestinal Strangulation.
WEDNESDAY.—5 P.M., Mr. G. F. Rowbotham: A Series of Tumours of the Skull. (Hunterian lectures.)
FRIDAY.—4 P.M., Mr. C. H. Fagge: John Hunter to John Hilton. (Hunterian Oration.)

UNIVERSITY OF LONDON.
MONDAY, Feb. 10th.—3 P.M. (London School of Hygiene, Keppel-street, W.C.), Col. L. W. Harrison: Venereal Disease (II.).
WEDNESDAY.—3 P.M. (London School of Hygiene), Col. Harrison: Venereal Disease (III.).
FRIDAY.—11 A.M. (London School of Hygiene), Dr. A. G. Maitland-Jones: Infant Feeding.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.
MONDAY, Feb. 10th.—5 P.M., Major-General Sir Robert McCarrison: Nutrition and National Health (first of three Lectures).

HAMPSTEAD GENERAL HOSPITAL, N.W.
WEDNESDAY, Feb. 12th.—4 P.M., Dr. H. C. Semon: Eczema, Modern Theories and Treatment.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W.
TUESDAY, Feb. 11th.—5.30 P.M., Dr. J. M. H. Campbell: Paroxysmal Tachycardia.

LONDON SCHOOL OF DERMATOLOGY, 5, Lisle-street, W.C.
TUESDAY, Feb. 11th.—5 P.M., Dr. H. T. Barron: Common Skin Diseases in Childhood.
WEDNESDAY.—5 P.M., Dr. I. Muende: Histopathology.
THURSDAY.—5 P.M., Dr. J. A. Drake: Some Disorders of Sweating.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
WEDNESDAY, Feb. 12th.—2 P.M., Dr. W. G. Wyllie: Pulmonary Fibrosis and Bronchiectasis. 3 P.M. Dr. W. W. Payne: Blood Chemistry in Acute Pulmonary Disorders.
Out-patient clinics daily at 10 A.M. and ward visits at 2 P.M.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, Feb. 10th.—3.30 P.M., Dr. Kinnier Wilson: Some Heredo-familial Diseases (I.) Pyramidal.
TUESDAY, 3.30 P.M., Dr. Critchley: Cerebral Vascular Disease (III.).
WEDNESDAY.—3.30 P.M. Dr. Kinnier Wilson: Clinical Demonstration.
THURSDAY.—3.30 P.M., Dr. Carmichael: Myasthenia Gravis.
FRIDAY.—3.30 P.M., Dr. Brinton: Facial Neuralgia.
Out-patient clinic daily at 2 P.M.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.
MONDAY, Feb. 10th.—10 A.M., Medical wards and skin clinic. 11 A.M., Surgical wards. 1.30 P.M., Gynæcological wards. 2 P.M., Surgical wards, gynæcological and eye clinics. 4.15 P.M., Mr. Green Armytage: Hormones in Gynæcology.
TUESDAY.—10 A.M., Medical wards. 11 A.M., Surgical wards. 2 P.M., Throat clinic. 4.15 P.M., Mr. Woodd Walker: Derangements of Knee-joint.
WEDNESDAY.—10 A.M., Children's ward and clinic. 11 A.M., Medical wards. 2 P.M., Eye clinic. 4.15 P.M., Lecture on anæsthesia.
THURSDAY.—10 A.M., Neurological and gynæcological clinics. Noon, Fracture clinic. 2 P.M., Eye and genito-urinary clinics.
FRIDAY.—10 A.M., Skin clinic. Noon, Lecture on treatment. 2 P.M., Throat clinic.
SATURDAY.—10 A.M., Surgical and children's clinics, medical wards.
Operations, medical and surgical clinics daily at 2 P.M.
The lectures at 4.15 P.M. are open to all medical practitioners without fee.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Feb. 10th, to SATURDAY, Feb. 15th.—ST. JOHN'S HOSPITAL, 5, Lisle-street, W.C. Afternoon course in dermatology.—BROMPTON HOSPITAL, S.W. All-day course in chest diseases.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. All-day course in gynæcology.—NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W. Tues., 8.30 P.M., Mr. A. M. A. Moore: Injuries to Tendons, Muscles, and Joints. Thurs., 8.30 P.M., Mr. E. W. Riches: Kidney and Bladder.—Courses are open only to members and associates of the fellowship.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION,
WEDNESDAY, Feb. 12th.—4 P.M. (St. James's Hospital, Ouseley-road, Balham, S.W.), Dr. H. Crichton-Miller: The General Practitioner's Approach to Psychoneurosis.

LEEDS GENERAL INFIRMARY.
TUESDAY, Feb. 11th.—3.30 P.M., Dr Vining: Some Problems in Connexion with the New-born.

LEEDS PUBLIC DISPENSARY.
WEDNESDAY, Feb. 12th.—4 P.M., Dr. S. J. Hartfall: Influenza.

UNIVERSITY OF DURHAM.
SUNDAY, Feb. 16th.—10 A.M. (Newcastle General Hospital), Mr. G. A. Mason: Selected Chest Cases.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.
WEDNESDAY, Feb. 12th.—4.15 P.M. (Royal Samaritan Hospital for Women), Dr. Donald McIntyre: Hæmorrhage from the Genital Tract.

Vacancies

For further information refer to the advertisement columns

All Saints' Hospital, Austral-street, West-square, S.E.—Res. H.S. At rate of £100.
Archway Hospital, Archway-road, N.—Asst. M.O. £250.
Barbados General Hospital.—Sen. Res. Surg. £450.
Bexley Urban District Council.—M.O.H. £800.
Birmingham, Ear and Throat Hospital.—Third H.S. At rate of £150.
Birmingham, Queen's Hospital.—Bacteriologist and Clin. Pathologist. £600. Also Res. Surg. Reg. £100.
Blackburn Royal Infirmary.—H.S. £175.
Bradford, Municipal General Hospital, St. Luke's.—H.P.'s and H.S.'s. Each at rate of £150.
Brighton, Royal Sussex County Hospital.—Second Asst. Pathologist. £450.
Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.
Cardiff Royal Infirmary.—H.P.'s, H.S.'s, and Cas. O. Each at rate of £50.
Chelsea Hospital for Women, Arthur-street, S.W.—Registrar (Gynæcological) and Radium Officer. £75.
City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—Asst. Laryngologist.
Colchester, Royal Eastern Counties Institution for the Mentally Defective.—Asst. M.O. £350.
Constance-road Institution, East Dulwich, S.E.—Asst. M.O. £250.
Coventry and Warwickshire Hospital.—Res. Cas. O. £125.
Dewsbury and District General Infirmary.—Sen. H.S. £200.
Doncaster Royal Infirmary.—H.S. to Eye and Ear, Nose, and Throat Depts. £175.
Egyptian Government.—Director of Lunacy Division in P.H. Dept. L.E. 1020 to L.E. 1200.
Evelina Hospital for Sick Children, Southwark, S.E.—H.P. At rate of £120.
Forest Gate Hospital, Forest-lane, E.—First Asst. Res. M.O. £525. Also Second Asst. Res. M.O. £350.
Gloucestershire Royal Infirmary, &c.—H.S. to Ear, Nose, and Throat Dept. At rate of £150.
Halifax Royal Infirmary.—Third H.S. At rate of £150.
Hampstead General and N.W. London Hospital, Haverstock Hill, N.W.—Cas. Surg. O. for Out-patient Dept. At rate of £100.
Hertford, Ware Park Sanatorium.—Asst. M.O. £300.
Holborn Metropolitan Borough, W.C.—Public Vaccinator.
Hull City Hospital for Infectious Diseases, Cottingham.—Res. M.O. £350.
Hull Royal Infirmary.—First H.S. and Second Cas. O. Each at rate of £150.
Ilford, West Ham Mental Hospital, Goodmayes.—Jun. Asst. M.O. £350.
Infants Hospital, Vincent-square, Westminster.—Res. M.O. £300. Also two Physicians to Out-patient Dept.
Ipswich Sanatorium, Foxhall-road.—Asst. M.O. £350.
Kettering Rural District Council, &c.—M.O.H. £800.
Kingston-upon-Hull City and County.—Asst. M.O.H. £600.
Leeds University.—Chair of Physiology. £1000.
Leicester Royal Infirmary.—Sen. Cas. O. At rate of £125.
Lewisham Hospital, High-street, S.E.—Asst. M.O. £350. Also Asst. M.O. £250.
Liverpool, Alder Hey Hospital.—Res. Asst. M.O.'s. Each £200.
Liverpool, Fazakerley Sanatorium.—Res. Asst. M.O. £200.
Manchester, Baguley Sanatorium.—Deputy Med. Supt. £500.
Manchester, Duchess of York Hospital.—Sen. Res. M.O. At rate of £125.
Manchester Victoria Memorial Jewish Hospital.—H.P. At rate of £120.
Metropolitan Hospital, E.—Hon. Surgeon. Also Surg. Reg.
Middlesex County Council.—Tuber. M.O. £750.
Miller General Hospital, Greenwich-road, S.E.—Cas. O., Out-patient Officer. Each at rate of £150. Also H.P. & H.S. Each at rate of £100.
National Hospital, Queen-square, W.C.—Res. M.O. £200.
New End Hospital, Hampstead, N.W.—Asst. M.O. £250.
Northampton County Mental Hospital, Berrywood.—Second Asst. M.O. £450.
Nottingham Children's Hospital.—Res. H.S. At rate of £150.
Nottingham General Hospital.—Cas. O. At rate of £150.
Portsmouth Royal Hospital.—H.P. At rate of £130.
Preston, Sharoe Green Hospital.—Sen. Asst. Res. M.O. Also Jun. Asst. Res. M.O. At rate of £200 and £100 respectively.
Princess Beatrice Hospital, Richmond-road, Earl's Court, S.W.—H.S. and H.P. Each at rate of £110.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Res. Anæsthetist. At rate of £100. Res. Anæsthetist and Dist. Res. M.O. At rate of £90. Also Asst. Res. M.O. At rate of £80.
Royal Chest Hospital, City-road, E.C.—Clin. Assts.
Royal National Orthopædic Hospital, 234, Great Portland-street, W.—Asst. Res. Surg. for Country Branch. £250.
Royal Naval Medical Service.—Eight vacancies.
St. Andrew's Hospital, Devons-road, E.—Asst. M.O. £250.
St. Bartholomew's Hospital, E.C.—Dental H.S. £80.
St. John and St. Elizabeth Hospital.—Surg. Registrar. £100. Also Clin. Asst., Ear, Nose, and Throat Dept.
St. John's Hospital, Lewisham, S.E.—Med. Reg. to Out-patients. 50 guineas.
St. Leonard's Hospital, Hoxton-street, N.—Asst. M.O. £250.
St. Luke's Hospital, Sydney-street, S.W.—Asst. M.O. £250.
Salisbury General Infirmary.—H.S. At rate of £125.
Sheffield Children's Hospital.—H.S. At rate of £100.
Sheffield Royal Hospital.—Clin. Asst. to Ophthalmic Dept. Also Clin. Asst. to Ear, Nose, and Throat Dept. Each £300.
South Eastern Hospital for Children, Sydenham, S.E.—Jun. Res. M.O. At rate of £100.
Swindon and North Wilts Victoria Hospital.—Res. M.O. £150.
Wakefield, Middleton-in-Wharfedale Sanatorium.—Res. Asst. M.O. £350.
Warwickshire County Council.—Asst. County M.O.H. £500.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Hon. Surgeon to Inoculation Dept.
West London Hospital, Hammersmith-road, W.—Half-time Pathologist. At rate of £300.
Westminster Hospital Annexe, 66, Fitzjohn's-avenue, Hampstead.—Three Radiologists for Clin. Res. Work. Each £300.
Woolwich and District War Memorial Hospital, Shooters Hill, S.E.—H.P. At rate of £100.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Manchester, South East, Lancs.

NOTES, COMMENTS, AND ABSTRACTS

THE PHYSICAL BASIS OF PSYCHONEUROSIS

PSYCHO-SOMATIC INTER-RELATIONS IN THE LIGHT OF CLINICAL MEDICINE[1]

BY SVEN INGVAR

PROFESSOR OF MEDICINE, UNIVERSITY OF LUND, SWEDEN

FOR centuries the relations between British and Swedish sciences have been close and intimate. I have only to recall my famous countryman, Emanuel Swedenborg, who spent many years here in England until he died in London (1772). Another brilliant representative of Swedish science, Carolus Linnæus, spent a happy and fertile time in this country. Sweden will always remain indebted to English science for its wonderful way of cultivating the spiritual heritage of these two radiant geniuses of the Swedish tongue, through the Swedenborg and Linnean Societies.

British medical science has had a great influence on medical progress in the world through its famous representatives of physiology. I think it is the generally accepted opinion throughout the world that English physiology has for a long time been the leading physiology—I only need to mention such names as Starling, Bayliss, Haldane, Barcroft, Dale, Hill, Adrian. The great progress of clinical medicine during the last decades is in the first place due to the progress in physiology. We have got into the dynamics of the different clinical symptoms, meaning for the patient better diagnosis and better treatment. No man has a greater influence in the evolution of clinical neurology than your Sherrington. Due to the consistent work of him and his school, the clinical neurology of to-day is no longer a mere description of different syndromes, it has become the science of the dynamics of the different nervous symptoms.

On this occasion I speak about the psycho-somatic inter-relations in disease, a subject that has been treated very exhaustively already in the literature from the philosophical, psychological, neurological, psychiatrical, as from the viewpoint of general medicine. Recently Flanders Dunbar published a monograph of almost 600 pages with the title: "Emotions and Bodily Changes," quoting no less than 2251 books and papers on the subject. It is significant that Dunbar states in his conclusions at the end of his extensive book that "the time is not yet ripe for writing a text-book on psycho-somatic inter-relations. It is possible," he continues, "that a text-book will never be written," and there is really no endeavour towards synthesis in his book.

Such are the difficulties met in this field. I am treating the subject from my personal experiences as a representative of general medicine. The majority of the workers in this field have been neurologists or psychiatrists, but when neurotic disturbances of internal organs are in question, nobody is more certain to collect experience than the general clinician. The questions form an integral part of general medicine, and in the general clinic the material of so-called organic neurosis is concentrated. Many others who have theorised or philosophised on the questions have not had the best material, neither has this material been examined according to the demands of the modern clinic.

[1] Lecture delivered before the Hunterian Society on Jan. 20th, 1936.

The Influence of the Emotions

Our psychical life has in various ways a momentous influence on all corporeal functions. Experimental psychologists have convincingly established that even the simplest form of intellectual activity without being emotionally coloured, influences the blood pressure, the distribution of blood in the vascular system, and the tone of the muscles. That the emotions have a very powerful effect is now quite generally accepted and is proved both by clinical observations and experiments. In this connexion it is necessary to mention Cannon's investigations of the influence of emotional conditions on animals. These physiological experiments are naturally of the greatest interest, but the influence of the emotions certainly extends much farther than we can show by physiological analysis. When we see how anguish forces its victim to roam about, how it banishes sleep and the appetite, when we see the flow of tears, the cold sweat and the pallor, we know, without further evidence, that emotion is a very serious business, and penetrates through every fibre of the being. Emotion thus always signifies a strong general alteration in the somatic functions of the body. If, in this manner the effect of psychical influence on the somatic functions is so visible, we are in the first place interested in trying to discover to what extent diseases in the internal organs of the body can arise by emotions, that is, in a psychogenic way—by diseases is meant a change of the anatomical substratum implying an irreversible process, disturbing life manifestations.

As we know the vegetative nervous system innervates the smooth muscles in the internal organs particularly in the walls of the vessels and of the digestive tube, as well as the great glands, and thus it is to be expected that nervous disturbances will appear especially in the smooth musculature in the tubular organs, or in the endocrine glands. A very often quoted German writer, Alkan, has lately proposed a principle of classification along these lines, and indicates various ways by which emotion could cause anatomical changes. Through an abnormal innervation of the muscles in the tubular organs—for example the gut, a cramp or spasm arises in some place, producing a local ischæmia which, if sufficiently intense, leads to ulceration; he instances the gastric ulcer. From such a cramp, in certain circumstances a stagnation easily arises in the proximal part of the tube, which in its turn leads to dilatation, and so the characteristic distensions can come about. Again, sphincteric cramp of the gall-bladder leads to stagnation of the bile, and the resulting change of concentration might cause gall-stones, and, inasmuch as spasm leads to stagnation of infectious material, even severe inflammatory conditions can naturally evolve. So cholecystitis, cholangitis, and colitis by constipation have been explained.

This seems in fact a very simple and in many ways acceptable scheme, but the question immediately presents itself as to how this theoretical plan fits in with our clinical experience. We are furthermore confronted with the question as to why this abnormal innervation occurs in a definite organ, differing for different individuals, why one person gets a spasm in the gullet, another in the pylorus causing stagnation

of food with vomiting, eructations, &c., another a spasm in the urinary bladder, another in the gall-bladder, and so forth. The psychogenic organ—selection in the somatic expression of the neurosis—is a fundamental problem which may be considered here.

The Psycho-analyst's Attitude

This question has especially been a subject of interest for psycho-analysts. They generally hold the view that as neurosis is to be considered as a general state of conflict so the manifestation of neurosis is a protest, and the choice of organ should have some sort of symbolical meaning. Differently talented people choose different musical instruments, similarly different temperaments choose different organs for their neurotic manifestations. That a disturbance in an organ really can sometimes denote a symbolic phenomenon created by pure psychogenic mechanisms, cannot surely be rejected. Reliable gynæcologists report, for example, how obstinate genital bleeding, or genital eczema, has been cured only after the removal of repulsive sexual psychical circumstances. A clinician must however be excused for not accepting a priori the symbolical interpretations of organic neurosis in their entirety, and for trying to fit them in with our further general knowledge of the pathophysiology of the organism.

Defining Neurosis: the Association of Organic Disturbance

If one wishes to define the term neurosis, I understand it as a disharmony of the nervous functions, and from this it is clear that the causes of neurosis must be various. All purely somatic injuries can cause neurosis, over-strain, chronic bodily disorders, intoxications (alcohol), infectious diseases, often cryptogenic. But especially everything which interferes with our will to live and to assert ourselves causes this functional disharmony. In this manner neurosis is the expression of a vital conflict. The more highly developed an individual is the more complicated is this conflict inclined to be. In the modern man one must seek the fundamental cause of neurosis in the social, moral, political, and religious field. It is clear that sexuality, which implies the tendency to lust of life in its highest potentiality must play a most important ætiological rôle. Here moral attitude, philosophy of life, temperament, the finest and most subtle differentiation of the personality are strongly decisive. But we can all be subject to conflicts, and it can undoubtedly be said that we all react neurotically to our conflicts. But from pronounced nervous disturbances, the great neuroses, the majority of us are however fortunately saved. The war has in a most convincing way brought to light, what was not so clearly known before, how our hereditary mass, our internal fundamental structure or constitution, plays a decisive rôle in morbid nervous reaction. All the horrors and psychical torments of the war did not succeed in producing any new nervous disease. Naturally nervous exhaustion was extremely common—not alone among the soldiers at the front—but this appeared generally benign, and when occasion for rest and recreation was found there was a spontaneous and rapid recovery.

We know how with organic brain diseases, typical paralysis or convulsions arise in the muscles of different parts of the body. In this connexion it is pertinent to ask if organic brain lesions also cause disturbances in the internal organs. Examining organic brain diseases from this point of view, one is, in clinical medicine, instantly confronted with the fact that these occur astonishingly seldom. Organic brain diseases hardly ever cause nervous diseases of internal organs. The epidemic encephalitis, as we have learnt it in the last years, has its anatomical point of attack chiefly in the vegetative centres in the middle brain. One might, for instance, find in epidemic encephalitis characteristic changes in the organism in its entirety, which calls dystrophia adiposogenitalis to mind. In encephalitis there is furthermore often found an increase of salivary secretion and a change of the functions of the sebaceous glands, which gives the face an appearance of having been rubbed with fat, the so-called "oily-face," or the interesting disturbance of the water metabolism, diabetes insipidus, but localised disturbances of internal organs are not a characteristic feature of encephalitis. Neither Wimmer nor Economo tell about these.

It is likewise a clinical fact that organic disturbances play a very small part in epileptic attacks. These may consist of a vasomotor spasm in the brain cortex leading to violent functional discharge which shows itself in unconsciousness, violent muscular cramps, &c. During the fit the muscles of the urinary bladder in particular may contract. This might be in agreement with our knowledge of the bladder's representation in the brain cortex. But localised cramps in smooth musculature of other internal organs are not known to appear in the epileptic attack. It is true also of other serious organic diseases in the brain, for example, brain tumours, that they manifest themselves to a remarkably small extent in the internal organs.

Another circumstance which certainly does not lack significance in the consideration of the difficult psychogenesis problem is organic manifestations in hysteria. This disease also produces characteristic syndromes—paralysis, contractures, disturbance of sensibility, and so forth—which since the time of Charcot have been minutely studied. Modern research has shown that primitive nervous mechanisms released by emotion appear in the manifestations of hysteria. It is thus remarkable that in hysteria symptoms from the internal organs play such a small rôle in the clinical picture as they do. The tendencies of the hysterical personality make it understandable that phenomena like aerophagia followed by loud eructations are for certain individuals an instrument of self-assertion. The same likewise applies to hysterical vomiting. Such phenomena cannot be considered as organic neurosis in a proper sense. It is evident from all extensive compilations in medical literature concerning hysteria (Vorkastner and Kehrer) that hysterical heart, stomach, or intestinal diseases are not known with certainty, and that the hysterical mechanisms, with their tendency to protestation and self-assertion, have no tendency to influence internal organs.

The Great Endocrine Glands

In considering to what degree nervous disturbances of the greater endocrine glands really appear, it may first be stated that we have from the experience of clinical medicine no fixed evidence that diabetes can arise in a purely psychogenic way. For a long time it has been considered certain by some authors that psychic momentum can lead to diabetes: it was very often stressed that certain individuals living under strong psychic tension, business men and others with an anxious life, were disposed to diabetes. It has even been emphasised in medical literature that during great economic crises the

prevalency of diabetes increases—the blood-sugar in diabetes should increase in inverse proportion to the sinking of share prices. Similarly it is alleged that under certain emotional conditions sugar can appear in the urine. It would therefore not be far-fetched to suppose that if a primary psychogenic increase of the blood-sugar is fed emotionally for a long time, we can have degeneration into real diabetes. The experiences of the world war, however, again contradict this, as no definite psychogenic diabetic cases occurred. Umber as well as Gottstein, who have great experience concerning this disease, accentuate this very strongly, and another prominent investigator in the field of metabolic diseases—namely, von Noorden—says that only he who is born to get diabetes gets it. We have nowadays, it appears, the right to deny the existence of emotionally caused psychogenic diabetes. This does not of course interfere with the fact that nervous influences can have an aggravating effect on the disease in question. Everyday clinical experience tells us that. Amongst those who treat diabetic patients it is well known that the blood-sugar increases if the patient gets excited. Cannon found that sugar did not develop in excited animals after removal of the adrenals. Neither the Swedish investigators, Marcus and Sahlgren, nor the Danes, Nielsen and Jörgensen, have, in their extraordinarily exact observations, been able to cause a glycosuria in healthy persons. Widmark has not been able to demonstrate glycosuria in his students before examination. (He interprets this fact as a proof that he is too easy an examiner.) Malmros, in the medical clinic of Lund, has not been able, in such serious situations as the severe final examinations of students or before surgical operations, to find either sugar in the urine or an increase of blood-sugar.

What is said in this connexion about the pancreas also holds good for the thyroid gland. For a long time we have had a definite idea that Graves's or Basedow's disease was often caused by psychic shocks, fright, anxiety, or sorrow. Amongst others, Chvostek champions this idea in his big monograph on this disease.

We have ourselves, in Sweden, for a long time accepted the view, that Graves's disease attacks in the first place women with a nervously exacting profession, such as teachers. Experiences from the war, however, have not with any convincing clearness given support to the idea of a purely psychogenic Graves's disease. The frequency of war-time Graves's disease did not rise in a way corresponding to the emotional stress of the population. In the occurrence of Graves's disease, again the constitution definitely plays an important rôle. That emotional conditions on the other hand play an enormous part in the progress and course of this disease we already understand, as we know that thyroid hypersecretion is one of its main characteristics, and this has in itself a great stimulating effect on the brain, especially on the functions of the vegetative nervous system; and treatment of Graves's disease must be focused perhaps even more on the psychic state of the patient than on the purely somatic symptoms. Stoddard has emphasised that the symptoms of exophthalmic goitre and the anxiety neurosis are exactly the same.

Psychical Factors in Heart and Vascular Disease

An important group of neuroses which in later years in the modern clinic is decreasing in number are the so-called heart neuroses. Lately the prominent German clinician Matthes has treated this problem and has accentuated the difficulty of relying on the diagnosis of heart neurosis in individual cases. In later years the electrocardiograph in particular has registered a number of disturbances in the heart's rhythm, which for a long time before were interpreted as nervous effects, depending on anatomical lesions in the myocardium. Heart neurosis was according to Kehrer a very little used diagnosis in the German army during the war. In most cases of functional heart disturbances, organic causes could be demonstrated, often among these, constitutional inferiority. The most prevalent of all nervous heart disturbances during the war were palpitations. The front soldiers living in anxious expectation concerning their fate, reacted simply with an increased frequency of the pulse. Sometimes even a low pulse frequency occurred. The effort syndrome of soldier's heart, or as it has been called in U.S.A. neurocirculatory asthenia, that was so to speak rediscovered during the world war, with dyspnœa, palpitation, and heartache is in some people the normal response to excessive fatigue, worry, or emotional stress, and to infection. The heart symptoms are only partial phenomena in a neurasthenic syndrome, and it is misleading and inadequate to consider it as heart neurosis. Dudley White states that there is no tendency for cases with this syndrome either to die prematurely or to develop heart diseases.

The diagnosis of heart neurosis has to take into account all the unmanifested lesions of the heart muscles, chronic septic diseases, degenerative sclerotic processes of the coronary vessels, and also disturbances in the internal secretions. When all these complicated and often subtle processes are properly considered there is not much room left for the conception of heart neurosis.

The influence of psychical factors on the vascular system is confirmed by the well-known fact that vasomotor phenomena play an important part in emotional reactions in general. One of the most common effects of emotions is, as we know, arterial hypertonia, and prolonged psychic tension undoubtedly also gives hypertonia of corresponding duration. The question arises if hypertonia so caused can after a time develop a real hypertension with its typical sclerotic alteration of the arterial system. The answer is by no means clear. Leading authors believe that hypertension begins as a nervous spasm of the arterial system leading to hypertrophy of the arterial walls and of the myocardium, with degeneration and pronounced arterio-sclerotic processes in the body not least in the kidneys. In this way some cases of nephro-sclerosis might develop. Many authors assert that arterial hypertension, so common in our modern times, is caused by psychic mechanisms. It is, however, necessary to state that no definite evidence has yet been produced for the pure psychical genesis, even if it must be regarded to a certain extent as probable. It must be emphasised that even if it has been clearly demonstrated that psychic stress has the effect of raising the blood pressure in a good many individuals there has not been found on the other hand a greater frequency in psychotic patients with depressive emotional states than in normal individuals. Researches of uniovular twins have lately demonstrated to what a large extent the constitutional factor acts in the individual cases in producing arterial hypertension.

Asthma as a Nervous Disease

It is a prevalent idea that bronchial asthma ought to be regarded as a nervous illness, indeed one

often finds it stated in medical literature that it should be treated purely psychotherapeutically. From researches in later years we have now a rather clear conception of the asthma attack as an allergic disease. In accordance with this, we regard it as a general biological reaction of the body to foreign matter, so-called allergens. The reaction localises itself in some individuals, by what is for us an unknown cause, in the respiratory channels. By experimentally induced anaphylactic shocks in guinea-pigs, lung changes directly analogous to those resulting from asthma in the human body can be obtained, also in animals after cutting all nerves to the lungs. From our clinical experience we know that psychical causes play a somewhat important part in initiating an asthmatic attack, and asthma patients are often markedly nervous persons. They belong to the vegetatively stigmatised, if I may use what seems to me an appropriate expression, coined by von Bergman to replace the less adequate conceptions sympathicotonia and vagotonia. Many facts indicate that nervous people with their generally increased reflex irritability, to the influence of surroundings also have a lower threshold for the evolution of allergic reactions. The first asthma attack leaves behind it, probably for ever, a biological change localised in the cells of the respiratory channels. This means a disposition that makes way for a nervous reflex action which afterwards probably can be set in motion in a purely psychogenic way. We know that asthma often causes a strong feeling of anguish or oppression in the patient. It is not illogical to suppose that in certain sensitive predisposed patients any disagreeable situation can by degrees induce an asthma attack even without primary allergens. It is highly uncertain whether the asthma attack may even in these circumstances be considered as a direct primary psychogenic reaction. What has been stated, however, does not interfere with the fact that psychotherapy must be given an important place in the treatment of asthma.

The Digestive Apparatus and Psychic Influence

It is a well-known fact that the activity of the digestive tube is to a great extent dependent on psychical influence. This has been proved experimentally in many interesting ways. Katsch observed in rabbits in which an inlaid celluloid window was substituted for part of the abdominal wall that the gut instantly pales and its normal peristalsis stops if the animal is disturbed while eating, frightened, or subjected to pain. When one feeds an animal a lively movement instantly occurs in the whole gut. In Cannon's cats the movement of the stomach stops when they are confronted by an angry dog, and sometimes it takes an hour before any signs of life reappeared in it. Similar phenomena are well known from our clinical experience in human beings; Heyer especially has been able to show by X ray that the functions of the human gut are obstructed under the influence of a depressive state of mind. It is commonly known that fear or great sorrow can cause vomiting reflexes. It is told of the Swedish King, Gustaf the Fourth Adolphus, that he reacted with intense vomitings on learning that he had been dethroned. Bennet and Venables found that in hypnotic subjects to whom suggestions of nausea were made there was an inhibition of the normal rise of the curve of stomach secretion of hydrochloric acid.

If the influence of psychogenic factors on the motility as well as on the secretion of the stomach is verified in this way, the question then arises as to the extent these factors play in promoting diseases in the stomach. Here a retrospective clinical survey shows that the conception of a nervous stomach disease appears less and less during the last decades. As different subjective stomach symptoms, such as epigastric pains and pressure after meals, gastric hypersecretion, eructations, vomitings, &c., have been discovered to be due to anatomical causes, the gastric ulcer or gastritis, the diagnosis nervous dyspepsia, if not quite rejected, is nevertheless highly discredited.

Recently gastritis, in the examination of which the Danish clinician Knud Faber has done such estimable work, has again come into repute in the clinic. X ray investigations of the mucous membrane in the stomach, which has been worked out to a high degree of perfection by H. H. Berg, together with systematic researches on the gastric juice, and last but not least the introduction of the gastroscope, make it probable that inflammatory processes in the mucous membrane are much more common than we have been inclined to believe. Many new possibilities are thus opened up to the modern clinician to explain the diffuse and abstruse phenomena from the stomach as caused by organic lesions.

One observes from modern theories concerning nervous diseases in the stomach that readily as one formerly gave the diagnosis stomach neurosis, so reluctant is one nowadays to decide what shall rightly be called by this term. We must acknowledge that we have no definite knowledge as to the possibilities of psychical factors in causing primary irreversible processes in the stomach.

Constipation is the commonest of all functional disturbances in the colon. Regarding its causes it is clear that as psychical influences play such a dominating rôle, it must be straightaway regarded as a nervous disease. That joy improves the metabolism and peristalsis of the intestines, while sorrow has a depressing influence was already known to antiquity. It is well known that change of environment, for instance a voyage, is for many people an infallible cause of constipation. Regular living with regular habits play a vital part in the correct functioning of the intestines. We also understand how nervous influences affect the functions of the colon, from the fact that nicotine which has a stimulating influence on the sympathetic nervous system has a laxative effect. Many people improve the functions of the intestines by a morning cigar. Just as thyroid extract has a stimulating effect on the vegetative nervous system, so it also helps to stimulate the movement of the colon and is just the right medicine for certain cases of constipation. For us it is an interesting question as to whether anatomical lesions of the mucous membrane in the colon, such as colitis, can be caused in a purely psychical way. I think we may answer in the affirmative. If stagnation of the contents of the intestine continues sufficiently long, it will cause real inflammation of the colon with diarrhœa. It is an old theory that constipation is one of the chief causes of chronic ulcerative colitis and in the treatment of this disease great attention must above all be paid to the relief of existing tendencies to constipation. It is likewise known that a strong neurotic element can present itself in these patients.

Emotional influences on the functions of the intestines clearly occur in so-called nervous diarrhœa. Particularly women, but men also suffer from the fact that in situations which excite them or cause

fear the intestines react with increased peristalsis and secretion. A suitable name for this phenomenon is "situation diarrhœa." The situation naturally varies for different individuals. Certain people can only sit in an outside seat nearest to the w.c. in the theatre, the consciousness that the nearest way to the latter is clear is sufficient to set the intestines at rest. In other circumstances violent anguish and diarrhœa may occur.

Inasmuch as nervous conditions are reflected in the intestines so nervous disturbances often occur also in the bladder. It is well known that such disturbances make themselves felt in states of excitement.

The Influence of Psychogenic Factors: Summary

From what has been said it follows that from a critical study of the question whether psychogenic factors can directly cause irreversible processes in the organism, there is, according to modern clinical experience, no convincing evidence that it can be so. It has been stressed how organic lesions of the nervous system, even in the vegetative centres in the brain, to a surprising degree, leave the internal organs of the body intact, how also the purely psychogenic mechanisms in hysteria seldom disturb the internal organs, how serious organic diseases which are an everyday experience of the internist play a very small part in the asylums, among psychotic patients, but how the constitutional inferiority plays a vital part in causing neurotic reactionary conditions. It has also been emphasised that as the physiological analysis of disease phenomena is improved by the development of diagnostic methods, so the conception of organic neurosis is more discredited, and where we formerly supposed primary psychogenic mechanisms, we now know that the symptoms depend on primary anatomical processes in the organ which disturb its functions secondarily.

However, we will not claim that our knowledge of pathophysiology has advanced so far as to enable us to reject the possibility that psychogenic factors can sometimes under certain conditions really cause organic changes. Nevertheless it may be wiser to wait and see. Block proves in a reliable way that warts on the hands can be caused to disappear to purely suggestive remedies, by the same simple methods which for a long time have been used by old country women. It is stated by a series of authors that in suitable subjects cutaneous blisters could be produced by hypnotical suggestion. I must be forgiven for my scepticism. I have a strong feeling that the production of these suggested blisters should be the subject of further control experiments.

Anyhow the attempt to fit in disease phenomena in our knowledge of pathophysiology must be given due regard. Without further clear and solid evidence I feel we ought not a priori to interpret organic symptoms as psychical symbols—for instance, constipation must not be taken as a sign of covetousness, nor the convulsion of the epileptic attack be interpreted as a sexual act. Faithful to scientific methods, we must try to explain these and other similar phenomena as somatic expressions of certain released nervous processes in the body, where the organism in its manner of reaction is bound very closely to the nervous structures of its own within reach.

This does not in any way reduce the significance of psychical influence in disease, that is the emotions' importance in the course of any sickness. We must not forget that body and mind are a single unit. The anatomical organic change produces morbid feeling experienced by the sick person, and this latter is of course a purely psychical process. Here the intimate reciprocity of mind and body is a simple reality. In this manner every disease which disturbs the vital processes is always a psychical process, for all experience contains some psychical element. It is also clear from this starting point that whatever idea is held concerning the genesis of organic symptoms the psychical influence can never be discounted. This conclusion allows free scope for neurotic modification of organic diseases.

We have now a fixed attitude to the interesting question of psychogenic organ selection. We are convinced that emotion is a wave which spreads over the entire organism; we can only see it represented in certain external phenomena such as a distracted expression, pallor, tears, trembling, and so on, but at the same time we feel certain that it is a deeply seated business of the entire organism. We understand that there may be a predisposed state of irritation and that the emotion fixes itself fast there. The fact that some organic lesion often was latent explains that it has for a long time been wrongly concluded that the emotion *caused* something, whereas it has only *unveiled* the cause.

This general conception induces in us an attitude that will prove highly useful to our patients—we must be very energetic in trying to find out the real cause of any complaint of the patient. If the patient has got some consistent and persistent trouble in any part of his body, it implies some organic lesion, and the symptom should not be discounted as psychogenic or functional and treated purely psychotherapeutically.

Neurosis has been described as a disharmony of the nervous functions, and maintained that neurosis is a vital conflict. It is true of life instinct that it never gives up; a man fights to the last for life. We understand one of the most characteristic marks of neurotic phenomena, intensity and frenzy. Neurosis is not a weakening of the nervous functions but an intensification in the play of reflexes.

That neurosis is the unmasking of an organic lesion means the setting in motion of pathological reflex activity which nearly always takes the form of a vicious circle, and that for the neurotic person is his greatest trouble. Nervous symptoms generate one another and like rolling snowballs they increase with every turn. How far-reaching the effect of this psycho-somatic interaction in neurosis is, in the individual case, depends on many things: the talents, temperament, religious disposition, personality of the person in question. Thus the treatment of neurosis must be very difficult; the situation cannot be really understood if the disturbed organic reflexes are treated as pieces in a puzzle play. Neurosis is a human thing and the organs cannot be treated without considering the entire man. It has recently been stressed from so many different sources that the doctor's profession is before all an art, and sometimes this has been stated in a way which betrays contempt for medical science. As a reaction against the so-called morphological attitude, which medicine has inherited from the great days of the cellular pathologists, this view may be said to have a certain authorisation. But medicine must always remain a true science, the science of human nature. Anyone who undertakes the treatment of nervous organic diseases must take into consideration the experience of clinical medicine and of all medical science; these have been collected with great labour.

THE DIONNE QUINTUPLETS

ALTHOUGH the appearance and daily life of these five attractive sisters has been made familiar to the world at large by the screen and daily press, considerable interest attaches to Dr. Allan R. Dafoe's more technical account of their early life and feeding. He has already (Jour. Amer. Med. Assoc., 1934, ciii., 673) given an account of their birth and immediate treatment, and in the January issue of the *Canadian Medical Association Journal* he carries their medical history to the end of their first year.

Shortly after birth, the five infants were placed in a laundry basket and kept warm by means of blankets heated in the oven; later in the day it was possible to obtain a hot-water bottle, and on the third day an incubator was presented. Finally, there was a separate incubator for each infant; the temperature was at first kept between 87 and 90° F., and then at 84°, and by means of sponges soaked in hot water the humidity was maintained at between 50 and 55. Being born two months before term, the infants had the typical appearance of prematurity, breathed feebly and irregularly, and had frequent attacks of cyanosis and apnœa. Within the first week a cylinder of 95 per cent. oxygen and 5 per cent. CO_2 was obtained, and the gas administered as an "aperitif" before feeds and whenever there was cyanosis. This treatment was continued until they were three months old, by which time 14 cylinders, containing 80 gallons of the gas, had been used! Dafoe gives details of the feeding, and includes a set of weight charts that reflect every credit on all concerned. The Hospital for Sick Children, Toronto, supplied breast milk from the fourth day until the fourth to fifth month, in amounts finally reaching nearly a gallon a day. It is interesting that at one point one of the infants was getting 110 calories per pound body-weight, the daily caloric intake subsequently being gradually reduced to 40 per pound. So far they have been free from infection except for one attack of upper respiratory infection and otitis media, and an attack of gastro-enteritis which affected all five patients. After removal of the infants to the Dafoe Hospital, built across the road from their home in September, 1934, gown-and-mask technique was used continuously by all attendants.

Dr. Dafoe gives a humorous account of the recommendations for feeding and treatment that have reached him from all parts of the world—varying from burnt rye whiskey to sheep's dung in water. He does not emphasise the inevitable difficulties with which he must have been faced in a back-woods home of the type in which the infants were born, nor the continual intrusion of pressmen and sightseers. One cannot fail to be impressed, however, with the patient, ingenious, and successful way in which the medical care of the infants has been applied.

BILATERAL ECTOPIC PREGNANCY

A case of simultaneous bilateral tubal pregnancy is reported by S. J. de Vletter (Nederland. tijdschr. v. geneesk., 1935, lxxix., 5564). The patient, 35 years of age, had had two other children and four abortions. She was admitted to hospital complaining of acute abdominal pain and slight vaginal bleeding, the menstrual period being a fortnight overdue. The uterus was found to be slightly enlarged and the right tube could be felt as a distinct swelling. The left tube could not be felt. The diagnosis was made of a right tubal pregnancy, and as there were no urgent symptoms immediate operation was not undertaken. Next day there was another attack of pain, with signs of anæmia, and operation was therefore performed. Laparotomy disclosed a ruptured right Fallopian tube, with the extended ovum (measuring about 1·5 cm.) lying outside the tube in a mass of blood clot. The rupture was in the isthmus of the tube, which was removed. The left tube was seen to be ruptured at the same spot and was also removed. The patient made an uneventful recovery. Histological examination confirmed the presence of a bilateral ectopic pregnancy, both ova being apparently of the same age.

CERTIFICATION OF BLINDNESS

A CIRCULAR (No. 1520, 1*d.*) issued by the Ministry of Health to those responsible for the administration of the Blind Persons Act contains a warning that the method of testing visual acuity by cards is liable to give varying results according to the degree of illumination. Acting on the advice of the Council of British Ophthalmologists, they suggest that artificial illumination should be used in preference to daylight, and that the degree of illumination should be not less than 10 foot candles, setting out a method of obtaining this degree. This is however not one of the main difficulties with which the certifying surgeon is confronted. More important in doubtful or borderline cases of blindness than small differences in the acuity of central vision are defects in the visual field, already restricted when one eye is blind, the presence of nystagmus, and the question whether the blindness is progressive, stable, or capable of being improved by operation, treatment, or time. When all these have been considered, there may still be room for difference of opinion in the interpretation of the phrase "unable to perform any work for which eyesight is essential."

Births, Marriages, and Deaths

BIRTHS

BAMFORD.—On Jan. 28th, at Ely, Cambs, the wife of Dr. Brian Bamford, of a daughter.

BUCKTON.—On Jan. 29th, the wife of Dr. P. R. Buckton, of Wymondham, Norfolk, of a daughter.

CATTERALL.—On Jan. 27th, at Devonshire-place, the wife of Dr. R. C. F. Catterall, of a son.

GARLAND.—On Jan. 23rd, at Leeds, the wife of Dr. Hugh Garland, of a daughter.

HENSMAN.—On Jan. 29th, at Devonshire-place, W., the wife of Dr. Stuart Hensman, Buckingham-street, S.W., of a daughter.

MARRIAGES

KENNEDY—SHEPHERD.—On Jan. 25th, quietly, at Woodford, Essex, Michael Leo Kennedy, M.B.N.U.I., F.R.C.S. Eng., of Huddersfield, to Winifred Pearl Shepherd, of Highfields, Chigwell.

DEATHS

BATTLE.—On Feb. 2nd, at Horsell Common, Woking, William Henry Battle, F.R.C.S. Eng., Consulting Surgeon, St. Thomas's Hospital, late of Harley-street, London, in his 81st year.

CHRISTMAS.—On Jan. 30th, at Bozeat, Northamptonshire, Major R. W. S. Christmas, M.R.C.S. Eng., late R.A.M.C., B.E.F.

FARQUHARSON.—On Jan. 30th, at Chelsea, Stewart Farquharson, M.B. Lond., aged 41.

FORSBROOK.—On Feb. 3rd, 1936, at Victoria-street, London, S.W., William Henry Russell Forsbrook, M.D.

LUNN.—On Jan. 27th, at Olton, Birmingham, Cyril R. Lunn, M.B. Birm.

MACRAE.—On Feb. 2nd, at Newmill, St. Andrews, Farquhar Macrae, M.B. Glasg., consulting surgeon Western Infirmary, Glasgow.

MARNOCH.—On Feb. 2nd, 1936, at 28, Albyn-place, Aberdeen, Sir John Marnoch, K.C.V.O., D.L., LL.D., Emeritus Professor of Surgery in the University of Aberdeen.

PEARSE.—On Jan. 25th, the result of an accident, Frederick Edward Pearse, M.R.C.S. Eng., L.R.C.P. Edin., of Ripley, Surrey, aged 76.

PRIDHAM.—On Jan. 27th, at Burgh, Lincolnshire, Charles Fortescue Pridham, B.Chir. Camb., M.R.C.S. Eng.

ROB.—On Feb. 1st, 1936, in London, Joseph William Rob, O.B.E. M.D., of Oatlands Park, Weybridge, aged 59.

WAUGH.—On Jan. 29th, at Prenton, Birkenhead, Alexander Waugh, M.B. Glasg., aged 71.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

GREENOCK HOSPITAL.—Provost Bell, on Jan. 27th, cut the first sod on the site of the Rankin Memorial Maternity and Children's Hospital at Greenock. The hospital is being given to the town by Miss M. D. Rankin at a cost of £40,000 and it is expected to be finished within eighteen months. It will have room for 56 beds.